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0308	

Track excavator

38Z3

OPERATOR'S MANUAL

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The cover features the machine with possible optional equipment.

neuson

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Haidfeldstrasse 37
A-4060 Linz-Leonding

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Table of contents

Introduction
- Important information on this Operator's Manual ... 1-1
- Machine overview ... 1-2
- Brief description ... 1-3
  - Travelling drive ... 1-3
  - Work hydraulics ... 1-3
  - Cooling system ... 1-3
  - Cab (ROPS, TOPS and FOPS) ... 1-3
- Fields of application, attachments ... 1-4
  - Use: attachment ... 1-4
- Regulations ... 1-5
- EC declaration of conformity version 38Z$_3$ up to serial number AG00572 ... 1-6
- EC declaration of conformity version 38Z$_3$ from serial number AG00573 ... 1-7
- Type labels and component numbers ... 1-8
- Other signs and symbols ... 1-10
  - ...on the outside of the machine ... 1-10
  - ...inside the cab ... 1-12
- Fire extinguisher ... 1-14

Safety instructions
- Identification of warnings and dangers ... 2-1
- Warranty ... 2-1
- Designated use and exemption from liability ... 2-2
- General conduct and safety instructions ... 2-3
  - Organisational measures ... 2-3
  - Selection and qualification of staff, basic responsibilities ... 2-4
- Safety instructions regarding operation ... 2-5
  - Normal operation ... 2-5
  - Applications with lifting gear ... 2-6
  - Trailers and attachments ... 2-7
  - Transport ... 2-7
- Safety instructions for maintenance ... 2-8
- Warning of special hazards ... 2-10
  - Electric energy ... 2-10
  - Gas, dust, steam, smoke ... 2-10
  - Hydraulics ... 2-10
  - Noise ... 2-10
  - Oil, grease and other chemical substances ... 2-11
  - Battery ... 2-11
  - Chains ... 2-11

Operation
- Cab overview ... 3-3
- Instrument panel overview ... 3-5
- Putting into operation ... 3-6
  - Safety instructions ... 3-6
  - Putting the machine into operation for the first time ... 3-6
  - Running-in period ... 3-6
  - Check lists ... 3-7
  - Start-up checklist ... 3-7
  - Operation checklist ... 3-8
  - Parking checklist ... 3-8
- Driving the excavator ... 3-9
  - Preheating start switch ... 3-9
  - Throttle ... 3-9
  - Automatic revs setting (option) ... 3-9

Indicators and warning lights: overview 3-10
Before starting the engine 3-12
Starting the engine: general 3-12
Procedure 3-12
Starting with the drive interlock (option) 3-13
Starting at low temperatures 3-13
When the engine has started 3-14
Engine warm-up 3-14
Jump-starting the engine (supply battery) 3-14
Special instructions for driving on public roads 3-15
Moving off 3-15
Drive levers 3-15
High speed 3-16
Hydraulic brake 3-16
Mechanical brake 3-16
Driving on slopes 3-17
Specific safety instructions 3-17
Driving on slopes 3-18
Stabiliser blade operation 3-19
Parking the machine 3-20
Parking the machine on slopes 3-21
Light system 3-21
Roof lights (option) 3-22
Interior light 3-22
Rotating beacon (option) 3-22
Cab heating and ventilation 3-23
Heating adjustment 3-23
Washer system 3-23
Tank for washer system 3-24
Air conditioning (option) 3-24
Recirculated air mode 3-25
Seat adjustment 3-25
Weight adjustment 3-26
Height adjustment 3-26
Horizontal adjustment 3-26
Backrest adjustment 3-26
Seat belt 3-27
Emergency exit 3-28
Front window 3-29
Door 3-30
Engine cover 3-31
Battery master switch (model 38Z3) 3-32
Tilting the cab 3-32
Exit through the door 3-35
Adjusting the left-hand side armrest 3-36
Towing the track excavator 3-36
Towing 3-36
Crane handling the machine 3-37
Loading and transporting the machine 3-38
Strapping down the machine 3-39
Working with the machine 3-40
General safety instructions 3-40
Control levers/ISO controls: overview 3-41
Left-hand side control lever 3-41
Boom swivel controls 3-41
Lowering the boom with the engine switched off 3-42
Releasing pressure 3-42

Rotating the upper carriage 3-43
Swivel unit brake 3-43
Changeover valve for SAE/ISO controls (option) 3-44
Left-hand side control lever 3-44
Right-hand side control lever 3-44
Directional valve position 3-44
Directional valve 3-45
Control lever with proportional controls (option): overview 3-46
Function 3-46
Measures to be taken in case of malfunctions 3-47
Left-hand side control lever 3-47
Changeover between auxiliary hydraulics and boom swivel 3-48
Switching status display on/off for auxiliary hydraulics/boom swivel 3-48
Operating the boom/auxiliary hydraulics 3-48
Hammer operation 3-48
Adjusting control response: 3-49
Characteristic curves – status display 3-49
Lowering the boom with the engine switched off 3-50
Releasing pressure 3-50
Rotating the upper carriage 3-51
Swivel unit brake 3-51
Control lever if equipped with 3rd control circuit (option): overview 3-52
Left-hand side control lever 3-52
Boom swivel controls 3-52
Lowering the boom with the engine switched off 3-53
Releasing pressure 3-53
Rotating the upper carriage 3-54
Swivel unit brake 3-54
Re-equipping attachments 3-55
Specific safety instructions 3-55
Removing a bucket 3-55
Mounting a bucket 3-56
Quickhitch (option) 3-56
Connections for auxiliary hydraulics 3-57
Grab couplings 3-57
Attachments 3-58
“Hose burst valve” safety feature (option) 3-58
Working with the standard bucket 3-59
Inadmissible work 3-59
Excavator work position 3-60
Bucket position when digging 3-60
Excavating trenches 3-61
Loading 3-61
Grading 3-61
Excavating trenches sideways 3-62
Grading 3-63
Grading 3-63
Working alongside trenches 3-63
Stabiliser blade at rear 3-64
Safe load indicator (option) 3-64

Troubleshooting
Engine trouble 4-1

Maintenance
Introduction 5-1
Fuel system 5-2
Specific safety instructions 5-2

Refuelling 5-2
Stationary fuel pumps 5-3
Diesel fuel specification 5-3
Bleeding the fuel system 5-4
Fuel prefilter with water separator 5-4
Engine lubrication system 5-5
Checking the oil level 5-5
Filling up engine oil 5-6
Engine and hydraulics cooling system 5-7
Specific safety instructions 5-7
Checking/filling up coolant 5-8
Air filter 5-10
Replacing the filter 5-11
V-belt 5-12
Checking V-belt tension 5-12
Retightening the V-belt 5-13
Checking the V-belt of the air conditioning system 5-14
Tightening the V-belt of the air conditioning system 5-14
Hydraulic system 5-15
Specific safety instructions 5-15
Checking the hydraulic oil level 5-16
Filling up hydraulic oil 5-17
Important information for the use of biodegradable oil 5-18
Pilot valve 5-19
Checking hydraulic pressure lines 5-20
Chains 5-21
Checking chain tension 5-21
Setting the chains 5-22
Travelling drive 5-23
Checking the oil level and filling up oil 5-23
Draining oil 5-23
Maintenance of attachments 5-24
Electric system 5-24
Specific safety instructions 5-24
Service and maintenance work at regular intervals 5-24
Instructions concerning specific components 5-25
Alternator 5-25
Battery 5-26
General maintenance work 5-27
Cleaning 5-27
General instructions for all areas of the machine 5-27
Inside the cab 5-28
Exterior of the machine 5-28
Engine compartment 5-28
Screw connections and attachments 5-29
Pivots and hinges 5-29
Maintenance if the machine is out of service for a longer period of time 5-30
Preparatory work before taking the machine out of service 5-30
Putting the machine into operation again 5-30
Fluids and lubricants 5-31
Additional oil change and filter replacement (hydraulics) 5-32
Maintenance plan (overview) 5-33
Maintenance label 5-37
Explanation of symbols on the maintenance label 5-37

Specifications

Chassis 6-1
Engine 6-1
Hydraulic system 6-1
Undercarriage and swivel unit 6-2
Stabiliser blade 6-2
Work hydraulics 6-2
Electric system 6-3
Fuse box under the seat on the left 6-3
Main fuse box with relays at the upper left in the engine compartment 6-3
Relays 6-4
Noise levels 6-4
Vibration 6-5
Coolant compound table 6-5
Dimensions model $38Z_3$ 6-6
Lift capacity table $38Z_3$ 6-7
Lift capacity table $38Z_3$ counterweight (option) 6-8
Lift capacity table $38Z_3$ long stick (option) 6-9
Lift capacity table $38Z_3$ long stick, counterweight (option) 6-10

Symbole

"Hose burst valve" safety feature (option) 3-58

A

Abbreviations 1-1
Air filter 5-10
Applications with lifting gear 2-6
Automatic revs setting (option) 3-9

B

Battery master switch (model 38Z3) 3-32
Biodegradable oil 5-18

C

Chain maintenance 5-21
Check lists 3-7
Crane-handling bracket 3-37

D

Designated use and exemption from liability 2-2
Driving on public roads 3-15
Driving the excavator 3-9

F

Fire extinguisher 1-14
Fluids and lubricants 5-31

H

Heating 3-23
Hose burst valve (option) 3-58

I

Important information
On this Operator's Manual 1-1
Instrument panel overview 3-5
Interior light 3-22

L

Legal regulations 1-5
Light system 3-21
Lowering the boom with the engine switched off 3-42, 3-50, 3-53

M

Machine
Brief description 1-3
Fields of application 1-4
Loading and transporting 3-38
Overview 1-2
Maintenance
Air filter 5-11
Biodegradable oil 5-18
Bleeding the fuel system 5-4
Chain maintenance 5-21
Checking the coolant level 5-8
Checking the engine oil level 5-5
Checking the hydraulic oil level 5-16
Cleaning 5-27
Electric system 5-24
Engine and hydraulics cooling system 5-7
Engine lubrication system 5-5
Filling in engine oil 5-6
Filling up coolant 5-8
Filling up hydraulic oil 5-17
Fluids and lubricants 5-31
Fuel system 5-2
General maintenance work 5-27
Hydraulic pressure lines 5-20
Hydraulic system 5-15
Instructions concerning specific components 5-25
Maintenance plan 5-33
Pivots and hinges 5-29
Screw connections 5-29
Service and maintenance work at regular intervals 5-24
V-belt 5-12

N

Noise levels 1-10

O

Operation 3-1
Before starting the engine 3-12
Cab overview 3-3
Hose burst valve (option) 3-58
Instrument panel overview 3-5
Moving off 3-15
Parking the machine 3-20
Seat belt height adjustment 3-27
Starting the engine 3-12
Triple articulation boom (option) 3-41, 3-48, 3-52

P

Preheating start switch 3-9
Putting into operation 3-2
Check lists 3-7
Putting the machine into operation for the first time 3-6
Safety instructions 3-6

R

Refuelling 5-2
Rotating beacon 3-22
Running-in period 3-6

S

Safety instructions 2-1
- Applications with lifting gear 2-6
- General conduct 2-3
- Identification 2-1
- Maintenance 2-8
- Operation 2-5
- Special hazards 2-10
- Trailers and attachments 2-7
- Transport 2-7

Seat adjustment 3-25
- Backrest adjustment 3-26
- Horizontal adjustment 3-26
- Weight adjustment 3-26

Seat belt 3-27
Seat belt height adjustment 3-27
Signs and symbols 1-10
Specifications 6-1
- Chassis 6-1
- Coolant compound table 6-5
- Dimensions 6-6
- Electric system 6-3
- Engine 6-1
- Noise levels 6-4
- Vibration 6-5
- Work hydraulics 6-2

Starting aid 3-14

T

Indicators 3-10

V

Ventilation 3-23
- Ventilation, fresh air 3-23

W

Warranty 2-1
Washer system 3-23
- Tank 3-24

Working
- Freeing the machine 3-62
- Practical hints 3-62

1 Introduction

1.1 Important information on this Operator's Manual

Please store the Operator's Manual in the storage box at the rear of the seat.

This Operator's Manual contains important information on how to work safely, correctly and economically with the machine. Therefore, it aims not only at new operators, but it also serves as a reference for experienced ones. It helps to avoid dangerous situations and reduce repair costs and downtimes. Furthermore, the reliability and the service life of the machine will be increased by following the instructions in the Operator's Manual. This is why the Operator's Manual must always be kept at hand in the machine.

Your own safety, as well as the safety of others, depends to a great extent on how the machine is moved and operated. Therefore, carefully read and understand this Operator's Manual prior to the first drive. This Operator's Manual will help to familiarise yourself more easily with the machine, thereby enabling you to use it more safely and efficiently.

Prior to the first drive, carefully read chapter “Safety Instructions” as well, in order to be prepared for possible dangerous situations, as it will be too late for it during operation. As a rule, keep the following in mind:

Careful and prudent working is the best way to avoid accidents!

Operational safety and readiness of the machine do not only depend on your skill, but also on maintenance and servicing of the machine. This is why regular maintenance and service work is absolutely necessary. Extensive maintenance and repair work must always be carried out by an expert with appropriate training. Insist on using original spare parts when carrying out maintenance and repair work. This ensures operational safety and readiness of your machine, and maintains its value.

- Special equipment and superstructures are not described in this Operator's Manual.
- We reserve the right to improve the technical standard of our machines without adapting the Operator's Manual.
- Modifying Neuson products and fitting them with additional equipment and tools not included in our delivery program requires Neuson's written authorisation, otherwise warranty and product liability for possible damage caused by these modifications shall not be applicable.
- Subject to modifications and printing errors.

Your Wacker Neuson dealer will be pleased to answer any further questions regarding the machine or the Operator's Manual.

Abbreviations / symbols

- This symbol stands for a list
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence

☞ *This symbol requires you to carry out the activity described*

➥ Description of the effects or results of an activity

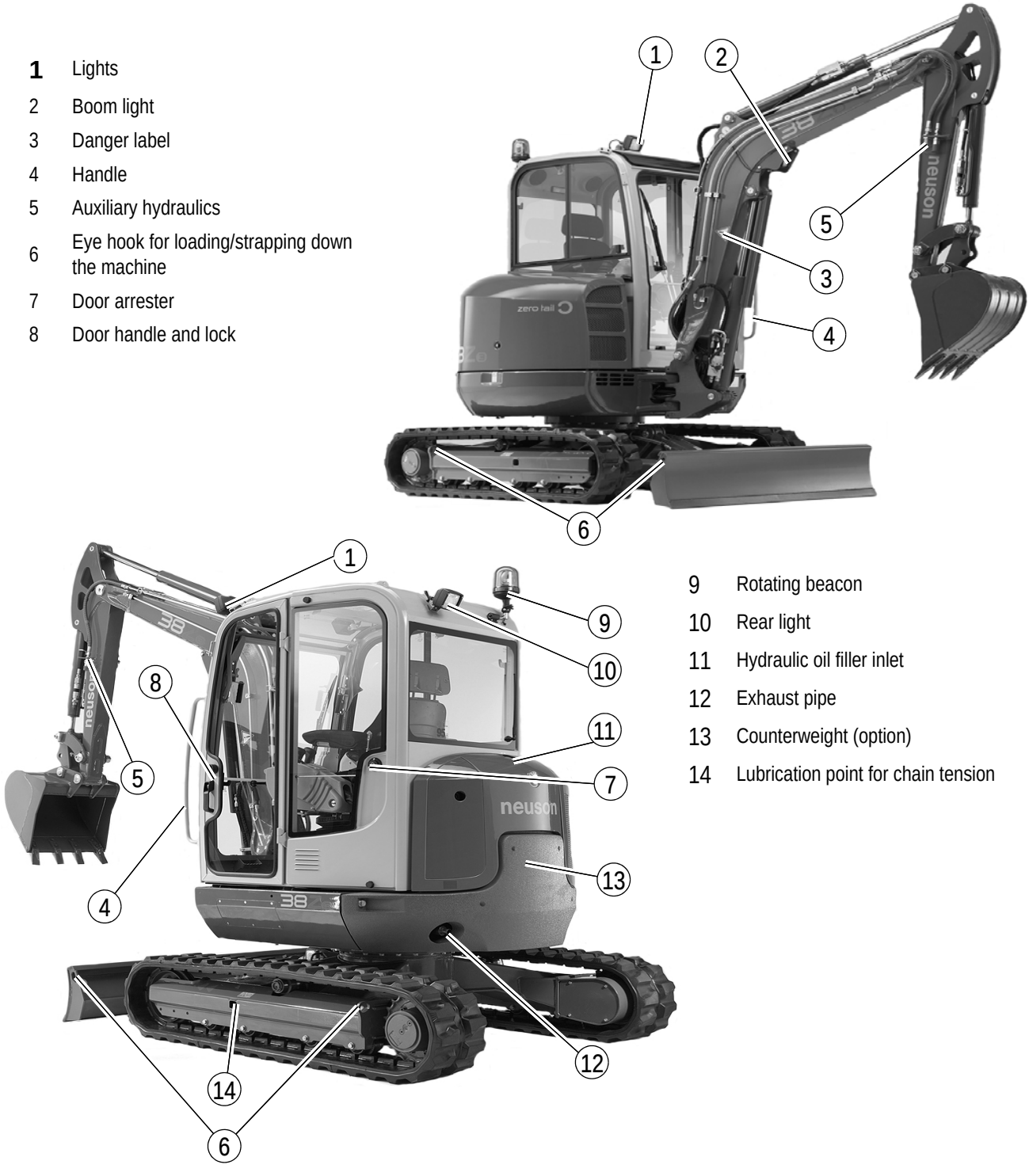
n. s. = not shown

“Opt” = option Stated whenever controls or other components of the machine are installed as an option.

This symbol shows the driving direction – for better orientation in figures and graphics.

1.2 Machine overview

1 Lights
2 Boom light
3 Danger label
4 Handle
5 Auxiliary hydraulics
6 Eye hook for loading/strapping down the machine
7 Door arrester
8 Door handle and lock



9 Rotating beacon
10 Rear light
11 Hydraulic oil filler inlet
12 Exhaust pipe
13 Counterweight (option)
14 Lubrication point for chain tension

Fig. 1: Machine outside views

1.3 Brief description

The model 38Z$_3$ excavator is a self-propelled work machine.

Get informed on and follow the legal regulations of your country.
This machine is a versatile and powerful helper for moving earth, gravel and debris on construction sites and elsewhere. A wide range of attachments accounts for the numerous applications of the machine, among others hammer and grab applications. See chapter – *see Fields of application, attachments* on page 1-4

The main components of the machine are:

- TOPS tested cab, closed version (standard)
- FOPS tested cab, closed version (option)
- Model 38Z$_3$: water-cooled Yanmar four cylinder diesel engine
- Sturdy steel sheet chassis; rubber-mounted engine

Travelling drive

The diesel engine permanently drives the twin axial variable displacement pump whose oil flow is sent to a hydraulic motor.

Work hydraulics

The diesel engine also drives the joint gear pump for the work hydraulics. The oil flow of this pump depends on the diesel engine revs only.

Cooling system

The indicators in the instrument panel of the machine ensure constant monitoring of the engine and hydraulic oil temperature, as well as of the coolant temperature and level.

Cab (ROPS, TOPS and FOPS)

Modifying or carrying out improper repair work on the cab is dangerous. Do not modify the cab. Repair work may be carried out by an authorised workshop only. If the cab has been damaged, check it before resuming work and have it repaired if necessary. Please contact your Wacker Neuson dealer for support. Failure to follow this precautionary measure can lead to severe or fatal injury. The cab has been specially designed for your protection in case of an accident.

Fasten your seatbelt, otherwise you can be thrown around or even outside the cab and crushed. Therefore always fasten your seatbelt as you drive and work with the machine. Tighten the seatbelt before taking up work with the machine.

1.4 Fields of application, attachments

The attachments will decide in the first place how the excavator is used.

Notice

In order to avoid damage to the machine, only the attachments listed below have been certified for installation on the machine.

☞ *Please contact your* Wacker *Neuson dealer if you wish to use other attachments.*

Using tools of other manufacturers, or tools which have been released for other excavator types, can reduce the machine's output and stability considerably, and can also cause damage to the machine and injuries to the operator or the staff.

Always compare the weight of the tool and its maximum payload with the indications in the lift capacity table. Never exceed the maximum payload stated in the lift capacity table.

Use: attachment

Possible attachments

Description of attachment	Weight	Capacity	Item no.:	Excavator	Remarks
Complete quickhitch	27 kg (60 lb)		1000018479	38Z$_3$	Required for operation of Neuson quickhitch systems
Bucket B = 300 mm	56 kg (123.4 lb)	50 l (13.2 gal)	1000093755	38Z$_3$	
	64 kg (141.1 lb)	50 l (13.2 gal)	1000017130	38Z$_3$	For quickhitch
Bucket B = 400 mm	64 kg (141.1 lb)	69 l (18.2 gal)	1000093756	38Z$_3$	
	72 kg (158.7 lb)	69 l (18.2 gal)	1000017125	38Z$_3$	For quickhitch
Bucket B = 500 mm	74 kg (163.1)	88 l (23.2 gal)	1000093757	38Z$_3$	
	82 kg (181 lb)	88 l (13.2 gal)	1000017127	38Z$_3$	For quickhitch
Bucket B = 600 mm	82 kg (181 lb)	107 l (28.3 gal)	1000093758	38Z$_3$	
	90 kg (198 lb)	107 l (28.3 gal)	1000017134	38Z$_3$	For quickhitch
Bucket B = 700 mm	90 kg (198 lb)	127 l (33.5 gal)	1000093759	38Z$_3$	
	99 kg (218.3 lb)	127 l (33.5 gal)	1000017128	38Z$_3$	For quickhitch
Fork	3.4 kg (7.5 lb)		1000070738	38Z$_3$	For quickhitch
Offset bucket B = 1000 mm short stick	135 kg (298 lb)	111 l (29.3 gal)	1000096567	38Z$_3$	
	142 kg (313 lb)	111 l (29.3 gal)	1000017131	38Z$_3$	For quickhitch
Offset bucket B = 1400 mm short stick	161 kg (355 lb)	158 l (41.7 gal)	1000096568	38Z$_3$	
	161 kg (355 lb)	158 l (41.7 gal)	1000017132	38Z$_3$	For quickhitch

Description of attachment	Weight	Capacity	Item no.:	Excavator	Remarks
Offset bucket B = 1000 mm long stick	135 kg (298 lb)	111 l (29.3 gal)	1000096569	38Z$_3$	
	142 kg (313 lb)	111 l (29.3 gal)	1000096571	38Z$_3$	For quickhitch
Offset bucket B = 1400 mm long stick	161 kg (355 lb)	158 l (41.7 lb)	1000096570	38Z$_3$	
	161 kg (355 lb)	158 l (41.7 lb)	1000096572	38Z$_3$	For quickhitch
Ditch cleaning bucket B = 1000 mm	84 kg (185.2 lb)	117 l (30.9 lb)	1000096563	38Z$_3$	
	102 kg (225 lb)	116 l (30.6 lb)	1000096549	38Z$_3$	For quickhitch
Ditch cleaning bucket B = 1400 mm	109 kg (240 lb)	166 l (43.9 lb)	1000096564	38Z$_3$	
	130 kg (287 lb)	164 l (43.3 lb)	1000096550	38Z$_3$	For quickhitch
Hammer mount console	27 kg (60 lb)		1000070743	38Z$_3$	

1.5 Regulations

Requirements to be met by the driver

Earth moving machines may be driven and serviced only by persons who meet the following requirements:

- 18 years or older
- Physically and mentally suited for this work
- Persons have been instructed in driving and servicing the earth moving machine and have proven their qualifications to the contractor
- Persons are expected to carry out work reliably.

They have been appointed by the contractor for driving and servicing the earth moving machine.

Get informed on and follow the legal regulations of your country.

1.6 EC declaration of conformity version $38Z_3$ up to serial number AG00572

EC Declaration of Conformity

according to EC Directive 98/37/EC, 2000/14/EC Appendix 6

Neuson Baumaschinen GmbH
Haidfeldstr. 37
A-4060 Linz-Leonding

declare, under their own responsibility, that the product

Product name	Neuson track excavator $38Z_3$
Model	$38Z_3$
Version	$38Z_3$
Serial no.	- - - - - - - - - - -

to which this declaration refers, corresponds to the pertinent fundamental requirements regarding safety and health of

EC Directive 98/37/EC,
and the requirements of further pertinent EC Directives and standards.
.

ISO 3471 and EN 13510	Tested 15.11.2006 06072-E		Administrative unit reported according to Appendix 6
2000/14/EC	information Noise level	dBA	TÜV München (Munich/Germany Industrial Supervisory Board) Westendstrasse 199 D-80686 Munich
	Measured value	95.3	
	Guaranteed value	95	

The following standards and/or technical specifications have been used for the proper application of the requirements regarding safety and health stated in the EC Directives:
EN 474-1, EN 474-3, EN292-1, EN 292-2, ISO 3471, EN 13510;

Place of storage of technical documentation:
Neuson Baumaschinen GmbH
Department: R & D
Haidfeldstr. 37
A-4060 Linz-Leonding

Linz-Leonding, (date) _ _ . _ _ . _ _ _ _

Josef Erlinger
Neuson Baumaschinen GmbH

1.7 EC declaration of conformity version 38Z$_3$ from serial number AG00573

neuson

EC Declaration of Conformity

according to EC Directive 98/37/EC, 2000/14/EC Appendix 6

Neuson Baumaschinen GmbH
Haidfeldstr. 37
A-4060 Linz-Leonding

declare, under their own responsibility, that the product

Product name	Neuson track excavator 38Z$_3$
Model	38Z$_3$
Version	38Z$_3$
Serial no.	- - - - - - - - - - -

to which this declaration refers, corresponds to the pertinent fundamental requirements regarding safety and health of

EC Directive 98/37/EC,
and the requirements of further pertinent EC Directives and standards.
.

ISO 3471 and EN 13510	Tested 15.11.2006 06072-E		Administrative unit reported according to Appendix 6
2000/14/EC	information Noise level	dBA	TÜV München (Munich/Germany Industrial Supervisory Board) Westendstrasse 199 D-80686 Munich
	Measured value		
	Guaranteed value	95	

The following standards and/or technical specifications have been used for the proper application of the requirements regarding safety and health stated in the EC Directives:
EN 474-1, EN 474-3, EN292-1, EN 292-2, ISO 3471, EN 13510;

Place of storage of technical documentation:
Neuson Baumaschinen GmbH
Department: R & D
Haidfeldstr. 37
A-4060 Linz-Leonding

Linz-Leonding, (date) _ _ . _ _ . _ _ _ _

Josef Erlinger
Neuson Baumaschinen GmbH

1.8 Type labels and component numbers

Fig. 1: Type label: location

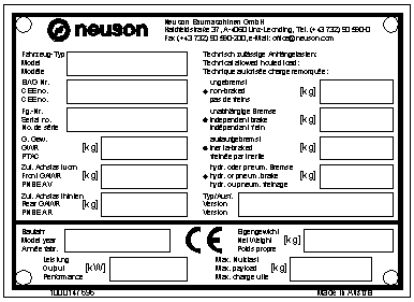


Fig. 2: Type label

Serial number

The serial number is stamped on the machine chassis. It is also located on the Product Indentification Number plate riveted to the front left chassis of the machine.

Type label information

Example: $38Z_3$

Model:	$38Z_3$
Year:	2007
PIN:	AE 000000
Power, SAE:	21.0 kW
Mass:	3800 kg (8378 lb)
Load:	----------
Max. gross mass:	----------
Max. axle load:	----------

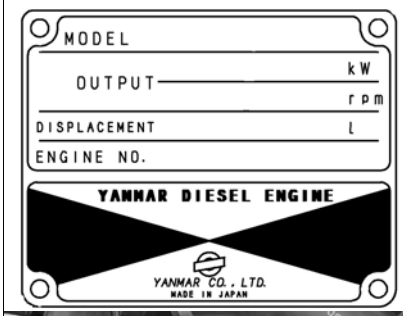
Other information – *see chapter 6 Specifications* on page 6-1

Fig. 3: Cab type label

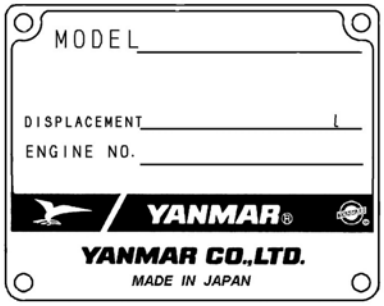
Cab certification number

The certification label (arrow) is located on the chassis of the cab, at the upper left beside the door.

Old engine type label (up to serial number AG00572):



New engine type label (from serial number AG00573):



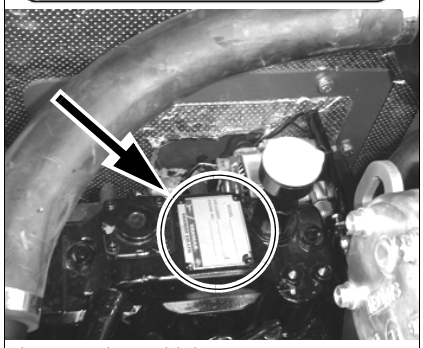


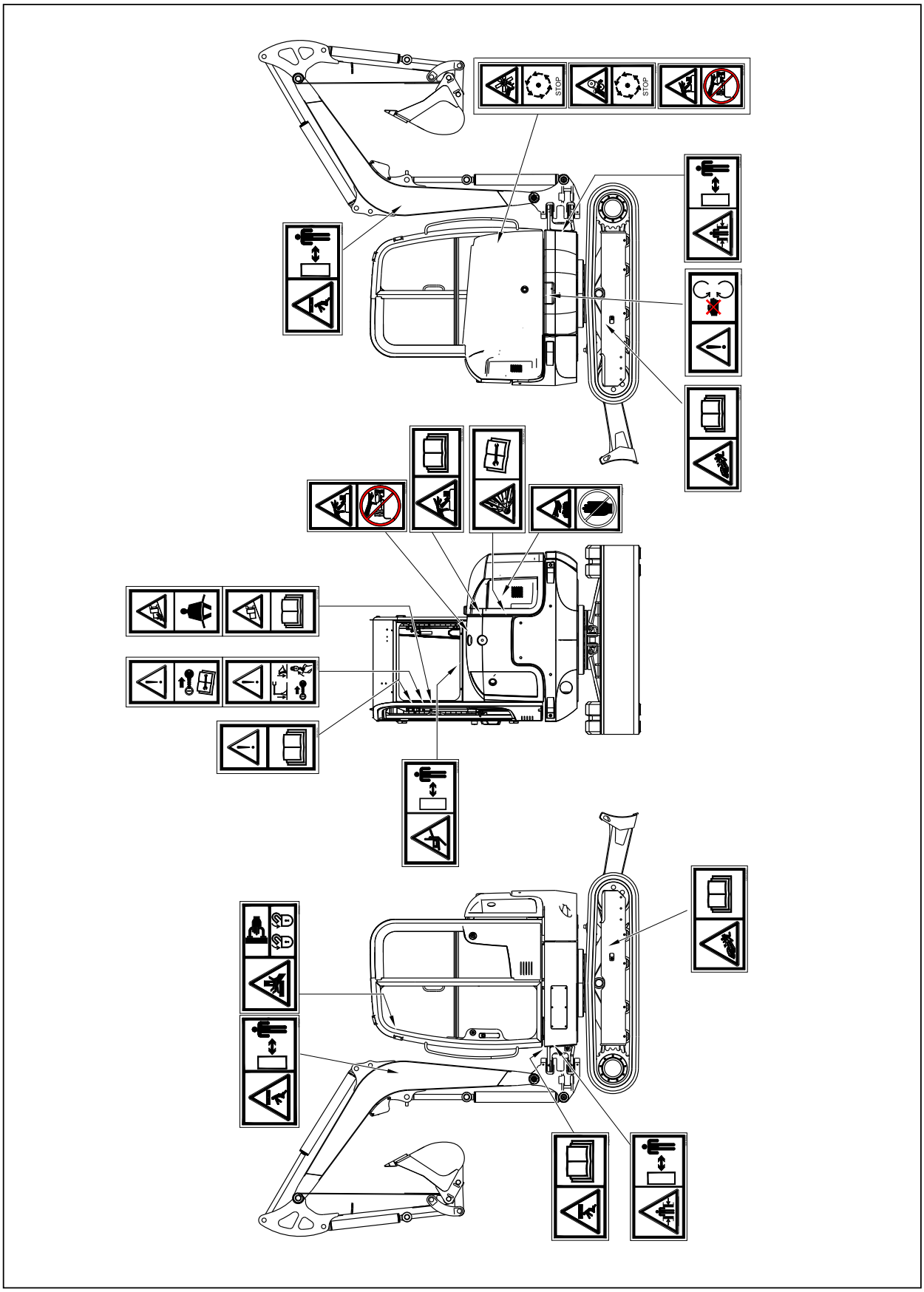
Fig. 4: Engine type label

Engine serial number

The type label (arrow) is located on the cylinder-head cover (engine).

Example: Yanmar 46557

Label overview



1.9 Symbols

The following symbols are displayed on the machine to provide pictorial information to the user. The information and explanations are provided to avoid misinterpretation by the user. The symbols have been chosen to provide important information to those involved with operating, adjusting, maintaining, and repairing this machine.

Fig. 5: Eye hook label

Description

Locates the lifting points for hoisting the excavator with lifting devices (slings, chains, or cables).

Location

On either side of the stabilizer blade, and on either side of the boom near the cylinder end of the stick hydraulic cylinder mounting.

Fig. 6: Label for points used for strapping down the machine

Description

Tie down points.

Location points designated for tie down of the machine during transport to prevent movement during transport.

Location

On either side of the stabilizer blade, and on either side of the undercarriage.

Fig. 7: Noise level label

Description

Noise levels produced by the machine.

L_{WA} = sound power level

Location

Cabine: On the left window.
Canopy: On the right wall of canopy

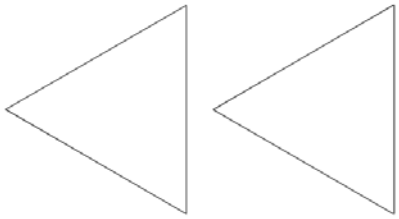


Fig. 8: Direction arrows

Description

This label shows the **forward** driving direction.

Location

On each undercarriage at the idler end of the structure.

Fig. 9: Diesel

Description

Fill location for diesel fuel only.

Location

Near the fuel filler neek in engine room.

Fig. 10: Hydraulic oil

Description

Hydraulic oil reservoir. Use hydraulic fluid only.

Location

On the tank cover.

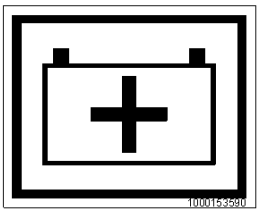


Fig. 11: Positive pole

Description

Indicate that these wiring connections are connected with the positive pole of the battery.

Location

In the engine compartment near the battery main switch.

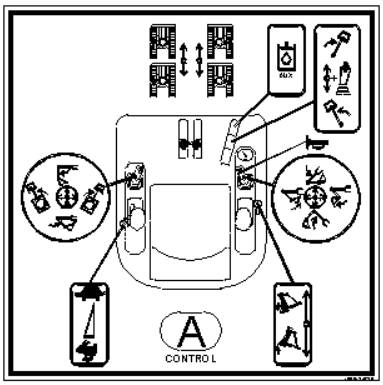


Fig. 12: Control pattern A

Description

Explains the functions of the joysticks (control pattern "A") and of other controls. If the machine is fitted with the "selection valve" check before starting the machine which control pattern you have chosen!

Location

On the cabin roof.

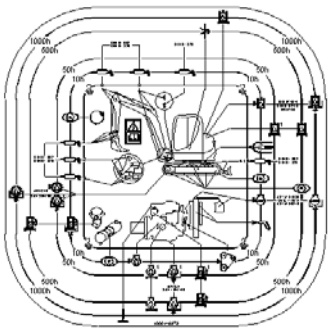


Fig. 13:

Description

Shows the main service intervals. For complete list of service interval see operator's manual section maintenance.

Location

Cabin: On the rear window.
Canopy: On the right canopy wall.

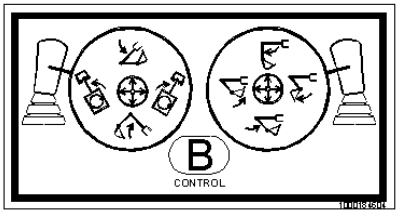


Fig. 14: Control pattern B (Opt.)

Description

Explains the functions of the joysticks (control pattern "B").
Check before starting the machine which control pattern you have chosen!

Location (Opt.)

On the cabin roof.

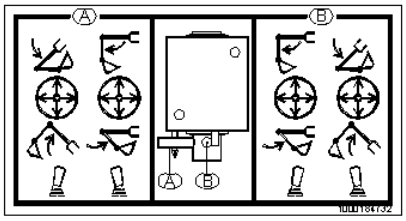


Fig. 15: Control pattern A or B (Opt.)

Description

Explains at which position of the selection valve which control pattern is chosen (control pattern "A" or "B"). Check before starting the machine which control pattern you have chosen!

Location (Opt.)

On the front of the chassis near swing cylinder.

Safety Labels

Always follow the instructions on the safety labels!

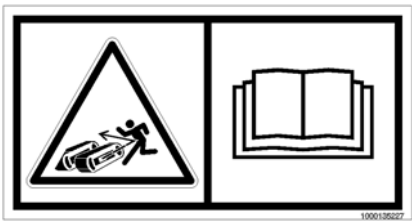


Fig. 16: Tighten tracks

Description

The label means the following:

- Potential high pressure grease discharge from the track tension adjustment fitting.
- Always read the operation manual before relaising or tightening the tracks to avoid potential injury from ejected grease.

Location

On the undercarriage near the opening to insert the grease fitting.

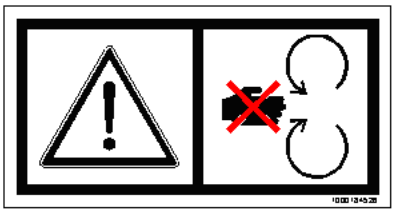


Fig. 17: Prohibitory label

Description

Stop the engine before opening or dismounting the safety devices (like engine hoot, fan guard,...)

Location

On the chassis near handle engine cover.

Fig. 18: Rotating V-belt

Description

This safety label warns of the following hazards:

1: Rotating fan.

Stay clear of the engine compartment until the fan is still running.

2: Stay clear of the engine compartment while the engine running!

3: The coolers are hot and under pressure!

Allow the coolers to cool down!

Carefully and slowly open the cover only after the cooler has cooled down, to allow the pressure to escape.

Wear safety goggles and gloves when opening the cover.

Location

In the engine compartment.

Fig. 19: Hot surfaces

Description

Hot surface! Do not touch.

Location

Engine comportment near exhaust system.

Fig. 20: Hydraulic oil tank under pressure

Description

The tank is hot and under pressure!

- Allow the fluids to cool down!

  Carefully and slowly open the cover only after the cooler has fluids down, to allow the pressure to escape.

  Wear safety goggles and gloves when opening the cover.

Location

On the top of the tank cover.

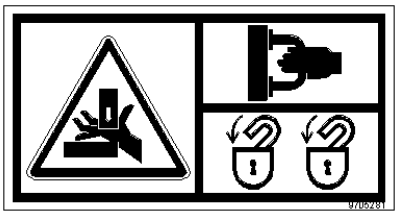


Fig. 21: Front window

Description

Always use the handles to open and close the front window.

Always fasten the front window with both locks.

Location

On the front window.

Fig. 22: Read the operation manual

Description

Read and understand the Operator's Manual before starting, operating, adjusting, maintaining, or repairing the machine.

Location

On the b-pillare in the cabine.

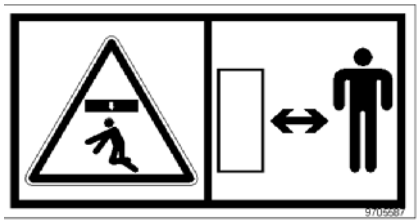


Fig. 23: Keep distance 1

Description

This label alerts persons standing or working near the machine of an existing danger within the area of increased danger around the machine. Keep clear of machine!

Location

On either side of the boom structure.

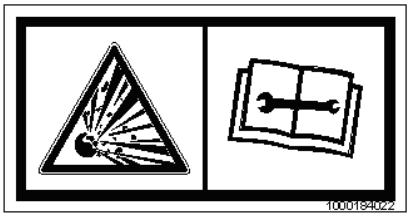


Fig. 24: Under pressure

Description

Accumulator is under high pressure. Always read operator’s manual before maintaining or repairing

Location

On the accumulator.

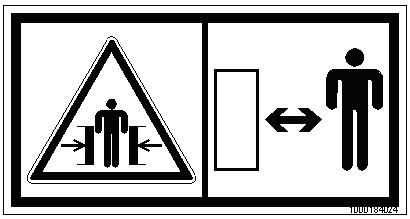


Fig. 25: Keep distance 2

Description

Indicates that persons other than the driver must keep a safe distance to the machine during operation. Keep clear of machine!

Location

On the left and right side of the boom swing console on the chassis.

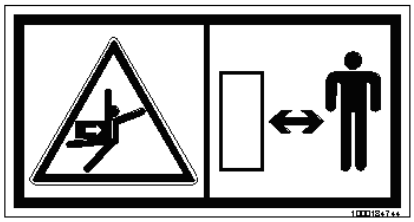


Fig. 26: Keep distance 3

Description

Indicates that persons other than the driver must keep a safe distance to the machine during operation. Keep clear of machine!

Location

On the rear window.

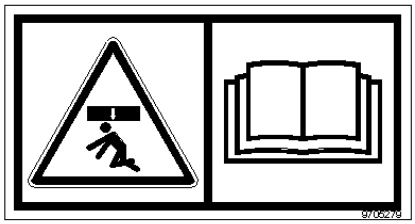


Fig. 27: Cap tiliting

Description

Read and understand the instructions in operator's and service manual before tilt the cabine.

Location

On the left front of the chassis.

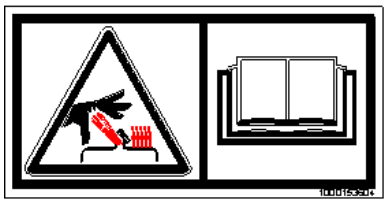


Fig. 28:

Description

Under high pressure. Allow the tank to cool down. Carefully and slowly open the breather screw only after cooled down, to allow the pressure to escape. Wear safety googles and gloves when opening the breather screw.

Location

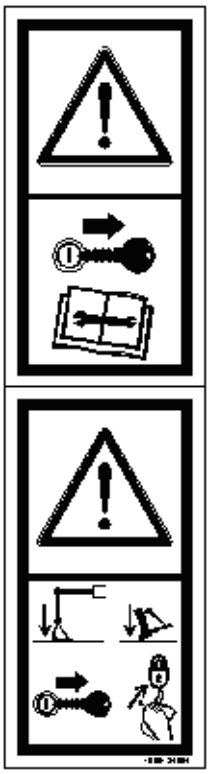


Fig. 29: Read manual before maintaining or repairing

Description

1: Before maintaining or repairing the machine stop the engine, remove the key, read and understand the Operator's and service manual.
2: Before leaving the machine lower all equipment to ground, remove the key and lock the controls.

Location

On the b-pillar in the cabin.

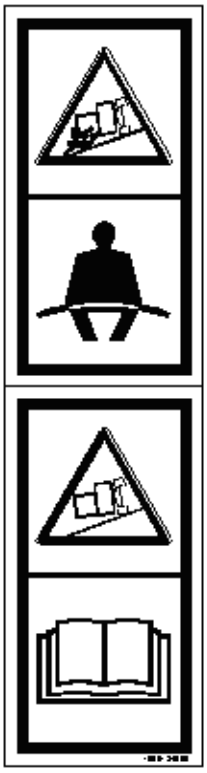


Fig. 30: Operator's seat and fasten seat

Description

1: Operate only from operator's seat and fasten seat belt to prevent falling out of the machine.
2: Operate within stability limits of maschine, do not overload, use only approved attachments and operate only at solid underground. Follow the instructions in the operator manual.

Location

On the b-pillar in the cabin.

1.10 Fire extinguisher

Fig. 31: Position of fire extinguisher

A fire extinguisher is not supplied with the machine.

☞ *Install a fire extinguisher rated by the appropriate regulatory agency in your area. The extinguisher must be rated to suppress electrical and petroleum fed fires.*

☞ *Location:*

➥ Mount the fire extinguisher in the cab behind the left side of the seat (see *Fig. 31*).

Important!

Check the extinguisher charge level as recommended by the extinguisher manufacturer and recharge or replace as instructed.

2 Safety Information

2.1 Safety Symbols Found in this Manual

This is the safety alert symbol. It is used to alert you to potential personal hazards.

- Obey all safety messages that follow this symbol..

Notice

NOTICE Used without the safety alert symbol. NOTICE indicates a hazardous situation which, if not avoided, could result in property damage.

Note: *Contains additional information important to a procedure.*

Important!

"Important" identifies an instruction that, when followed, provides for a more efficient and economical use of the machine.

Environment!

Failure to observe the instructions identified by this symbol can result in damage to the environment. The environment is in danger if environmentally hazardous material, such as waste oil, is not subject to proper use or disposal.

2.2 Warranty

Warranty claims must be submitted to your Wacker Neuson dealer only.

2.3 Designated Use and Exemption from Liability

1. In accordance with its designated use, the machine may be used ONLY for moving earth, gravel, coarse gravel or ballast and rubble. It may also be used for working with the attachments approved in the “Fields of Application” chapter.
2. No other applications are designated for the use of the machine. Neuson will not be liable for damage resulting from use other than mentioned above. The user alone will bear the risk.
3. “Designated use” also includes observing the instructions set forth in this Operator’s Manual and observing the maintenance schedule.
4. Machine safety can be negatively affected by carrying out machine modifications without proper authority and by using spare parts, equipment, attachments and optional equipment which have not been checked and released by Neuson. Neuson will not be liable for damage resulting from unapproved parts or unauthorized modifications. Neuson shall not be liable for personal injury and/or damage to property caused by failure to observe the safety instructions on labels and in this Operator’s Manual, and by the negligence of the duty to exercise due care when:
   - transporting the machine
   - operating the machine
   - servicing the machine and carrying out maintenance work
   - repairing the machine

   This is also applicable when special attention has not been drawn to the duty to exercise due care.
5. Read and understand this Operator’s Manual before starting up, moving, operating, servicing or repairing the machine. Observe all safety instructions.
6. The machine shall NOT be used for transport jobs on public roads!

2.4 General Conduct and Safety Instructions

Conditions for use

- The machine has been designed and built in accordance with state-of-the-art standards and recognized safety regulations. Nevertheless, its use can constitute a risk to the user or to third parties, or cause damage to the machine and to other material property.
- Read and follow this Operator’s Manual and other manuals that accompany the machine.
- The machine must only be used in accordance with its designated use and the instructions set forth in this Operator’s Manual.
- The machine must only be used by qualified operators who are fully aware of the risks involved in operating the machine.
- Do not start, move or operate a damaged or defective machine. Any mechanical dysfunctions, especially those affecting the safety of the machine, must be repaired immediately. Only qualified technicians shall determine how to move a damaged or defective machine to a safe place for diagnoses and repair.
- The user/owner commits himself to operate and keep the machine in serviceable condition and, if necessary or required by law, to require the operating or servicing persons to wear protective clothing and safety equipment

User training and knowledge

- Always keep this Operator’s Manual and other manuals that accompany the machine in their storage compartment provided in the operator station on the machine. Immediately replace an incomplete or illegible Operator’s Manual.

- All persons working on or with the machine must read and understand the safety information in this Manual before beginning work. This applies especially to persons working only occasionally on the machine, such as performing set-up or maintenance tasks.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention and environmental protection.These may include handling hazardous substances, issuing and/or wearing personal protective equipment, or obeying traffic regulations.
- The user/owner must regularly ensure that all persons entrusted with operation or maintenance of the machine are working in compliance with this Operator's Manual and are aware of the risks and safety factors of the machine.

Preparing for use

- Before starting up the machine, ALWAYS inspect the machine to make sure that it is ready for safe work and travel operation.
- Wear close-fitting work clothes that do not hinder movement. Tie back long hair and remove all jewelry (including rings).

Modifications and spare parts

- NEVER make any modifications, additions or conversions to the machine and its superstructures (for example, cab, etc.), or the machine's attachments, without the approval of Neuson! Such modifications may affect safety and/or machine performance. This also applies to the installation and adjustment of safety devices and valves, as well as to welding work on load-bearing elements.
- Spare parts must comply with the technical requirements specified by Neuson. Contact your Wacker Neuson dealer for assistance.

2.5 Operator and Technician Qualifications and Basic Responsibilities

User/owner responsibility

- Only allow trained and experienced individuals to drive, maintain, or repair the machine. NEVER let unauthorized or underaged persons operate with the machine.
- Clearly and unequivocally define the individual responsibilities of the operator and technician for operation, maintenance, and repair.
- Define the machine operator's responsibilities on the job site and for observing traffic rules. Give the operator the authority to refuse instructions by third parties that are contrary to safety.
- Do not allow persons to be trained or instructed by anyone other than an experienced person. Also, NEVER allow persons taking part in a general training course to work on or with the machine without being supervised by an experienced person.

Repair person qualifications

- Work on the electric system and equipment, on the undercarriage and the steering and brake systems may be carried out only by skilled individuals who have been specially trained for such work.
- Work on the hydraulic system of the machine must be carried out only by a technician with special knowledge and experience in hydraulic equipment.

2.6 Safety instructions Regarding Operation

Preparing for use

- Keep the machine clean. This reduces the risk of fire hazards (such as from combustible materials like rags), and reduces the risk of injury or operational accidents that can be caused by dirt build-up on the drive pedals or foot rests and steps.
- Observe all safety, warning, and informational signs and labels on the machine.

- Start and operate the machine from the seat only.
- The operator must sit in the seat, fasten and adjust the seat belt before putting the machine into operation.
- Always adjust the seating position before starting work. Never change the seat position when driving or working!
- Make sure that all safety devices are properly installed and functional before starting work.
- Before putting the machine/attachment into operation (startup/moving), make sure that no one in the immediate vicinity will be at risk.

Startup and shutdown

- Perform startup and shutdown procedures according to this Operator's Manual.
- Observe all indicator lights.
- Do not use starting fluid (for example, ether) especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.
- Make sure the control levers, the signaling and the light systems are functional before operating the machine, and also before restarting after an interruption of work.
- Fold up the control lever base before releasing the seat belt in order to avoid unintentional operation.

Work area awareness

- Familiarize yourself with the surroundings and circumstances of the work site before beginning work. Be aware of:
  - obstacles in the working and traveling area
  - the soil bearing capacity
  - any necessary barriers separating the work site from public roads
- Always keep at a safe distance from the edges of building pits and slopes.
- Look out for the following when working in buildings or in enclosed areas:
  - height of the ceiling/clearances
  - width of entrances
  - maximum load of ceilings and floors
  - sufficient room ventilation—danger of carbon monoxide poisoning!
- Observe the danger area. See "Danger area awareness".
- Always use the rearview mirror.
- Always switch on the work lights in conditions of poor visibility and after dark. However, make sure that users of public roads will not be temporarily blinded by the work lights.
- Provide additional lighting of the work area if the lights of the machine are not sufficient for carrying out work safely.

Danger area awareness

- The danger area is the area in which persons are in danger due to the movements of the machine, work equipment, additional equipment, or material.
- The danger area also includes the area affected by falling material, equipment or construction debris. The danger area must be extended by 0.5 m (20 inches) in the immediate vicinity of buildings, scaffolds, or other elements of construction.
- Seal off the danger area if it is not possible to keep a safe distance. Stop work immediately if persons do not leave the danger area in spite of warnings!

Operating the machine

- Never operate the machine if you are standing on the ground.

- Operate the machine ONLY when you are seated and you have fastened your seat belt. Stop the engine before releasing the seat belt.
- During operation on slopes, drive or work uphill or downhill. If traveling across a slope cannot be avoided, bear in mind the tilting limit of the machine. Always keep the attachments/work equipment close to the ground. This also applies to traveling downhill. When traveling or working across a slope, the load must be on the uphill side of the machine.
- On sloping terrain, adapt your travel speed to the prevailing ground conditions.
- Never get on or off a moving machine, and Never jump off the machine.
- The travel control levers require practice before a user becomes familiar with the control response. Therefore, adjust the travel speed to your abilities and the surroundings.
- When traveling across a slope with the telescopic undercarriage extended, position the boom facing down the slope, and the bucket about 10–20 cm (4–8 inches) above the ground. This will help to minimize the possibility of personal injuries and equipment damage caused by a hydraulic hose/connector failure in the telescopic undercarriage actuation system. The weight of the machine will cause the undercarriage to retract to the narrow configuration if hydraulic system pressure decreases due to lost fluid.

Carrying passengers

- Do not transport people on the machine or in the attachment.
- Never install a man basket or a working platform to the machine.

Mechanical integrity

- Take the necessary precautions to make sure the machine is used only when in a safe and serviceable state.
- Operate the machine ONLY if all protective and safety-oriented devices (ROPS, removable safety devices, soundproofing elements, exhausters, etc.) are in place and fully functional.
- Check the machine before entering the cab to operate the machine for visible damage and defects. Report any changes, including changes in the machine's function and response, to your supervisor immediately!
- If the machine is functioning unpredictably, stop the machine immediately, lock it, and report the malfunction to a qualified tecnician or supervisor. Safety-relevant damage or malfunctions of the machine must be rectified immediately.

Traveling

- When traveling on or in public areas, observe all applicable regulations. Make sure beforehand that the machine is in compliance with these regulations.
- Installed work lights must NOT be used for travel.
- When crossing underpasses, gates, bridges and tunnels, or when passing under overhead lines, make sure the clearance height and width are sufficient to avoid contact.
- Empty the bucket before traveling on public roads.

2.7 Applications with Lifting Gear

General information

- Craning applications are procedures involving raising, transporting and lowering loads with the help of slings and load-securing devices (for example, ropes and tracks). In doing so, the help of persons is necessary for securing and detaching the load. This applies, for example, to lifting and lowering pipes, shaft rings or containers.

- The excavator may be used for applications with lifting gear ONLY if the prescribed safety devices are in place and functional.

Safety criteria

- When used for craning applications, the machine must meet the following criteria:
  - Proper equipment for slinging and securing the load
  - Proper lift capacity per tables in this Operator's Manual
- In addition, a safe load indicator is required for machines bearing loads of over 1000 kg (2205 lbs.) or an overturning moment of over 40000 Nm (29,477 ft.lbs.).

Conditions for safe operation

- Secure the load to prevent it from falling or slipping. Install an OSHA-approved load hook after removing the bucket or other approved attachment to provide a secure attachment point for the lifting sling, chain, or cable.
- Have loads fastened, and crane operators instructed, by a qualified person competent in raning operation and standard hand signals. The person giving instructions to the operator must be within sight of the operator during load attachment and load disconnection.
- The load shall be kept as close to the surface as practical to accomplish the craning operation. The operator shall gently move the controls and machine to avoid swing or oscillating motion of the load. A tether line is recommended to dampen the tendency of the load to swing or oscillate during the craning operation.
- Machine travel with a raised load must be done very carefully on a level surface moving very slowly to avoid sudden motion that can cause swinging or oscillating motion of the load.
- The person(s) attaching the load to the excavator shall approach only if the operator is in visual contact with them. No one shall approach the machine or attempt to attach the load until the excavator has stopped and the operator has signaled for the attachment.

2.8 Attachments

General information regarding attachments

- Prior to traveling remove all attachments which cannot be secured in compliance with the legal regulations of your country.
- The machine operating characteristics including steering vary with different option attachments and counter weights. The operator shall be familiar with the variations and act accordingly.
- Use only approved attachments and connecting hardware.
- Attach and remove attachments carefully to avoid damage and potential injury.
- Attach and remove attachments carefully to avoid damage and potential injury.
- Confirm that the attachment has been properly and securely attached to the machine according to the instructions. Before using the attachment, the operator shall confirm that the attachment performs correctly in response to control actuation.
- Do not attach the attachment with the engine running and the machine moving.
- Before putting the machine/attachment into operation (startup/moving), make sure that no one in the immediate vicinity will be at risk.
- Before leaving the seat, always secure the machine against unintentional movement and unauthorized use. Lower the attachments to the ground.

Installation notes

- Couple and uncouple hydraulic hoses/lines (hydraulic quick couplers) only if the engine is stopped and the controls actuated to release the hydraulic pressure remaining in the circuit. Follow the operating instructions for releasing the pressure.

- Operate the machine only if all protective devices for the attachments have been installed and are functional, and if all brake, light and hydraulic connections have been connected.
- If an optional attachment is installed, make sure that all lights and associated indicator lamps are installed and functional.
- The lock pin of the quick hitch attachment shall be visible at each end of the pin to confirm that the attachment is securely locked in place. The operator shall perform a check operation to confirm the latching integrity before operating at a production pace.
- Prior to fitting attachments to the stick (the mobile extension of the boom), secure the control lever of the hydraulic control unit against unintentional movement. Raise the left arm rest to avoid unintentional activation for the ISO/SAE operating mode. Avoid actuating the right hand control if the alternative control mode is selected.

2.9 Transport and Towing

Towing

The machine must be towed, loaded and transported according to the procedures described within this Operator's Manual. See section See "Strapping down the machine" on page 40..

Transporting

- The transporting vehicle must have sufficient load capacity and platform size to safely transport the machine. Refer to section 6 of this manual to determine the physical characteristics of the machine before loading and transporting.
- Use OSHA-approved straps, tracks or cables to securely fastened the machine to the surface of the transport.
- Use the tie down points provided on the load surface of the transport.
- Attach the tie down devices to the excavator at the designated tie down points.
- Confirm that the excavator tie down procedures will prevent sideways, forward, rearward and upward motion of the excavator in the event the transport vehicle is involved in an incident or sudden avoidance maneuver.

2.10 Safety Guidelines for Maintenance

General maintenance notes

- Adhere to prescribed intervals or those specified in this Operator's Manual for routine checks/inspections and maintenance work.
- For inspection and maintenance work, ensure that all tools and workshop equipment are capable of performing the tasks prescribed. Do not use defective or broken tools. Use certified measuring devices that are routinely calibrated for accuracy (torque wrench, pressure gauge, ammeter, etc.).
- Replace hydraulic hoses within stipulated and appropriate intervals even if no safety-relevant defects have been detected.
- Make sure all consumables and replaced parts are disposed of safely and with minimum environmental impact.
- Always tighten any screws, electrical connections, or hose connections that may have been loosened during maintenance.
- Upon completion of the maintenance and repair work, immediately refit and check any safety devices removed for set-up or maintenance purposes.

Personal safety measures

- Brief the technician and the operator before beginning maintenance or repair work. Appoint someone to supervise the activities.

- Always work in groups of two when diagnosing a machine problem requiring the engine to be running. Both persons must be trained on the machine—one person must be seated on the seat and maintain visual contact with the other person.
- Observe the specific safety instructions in the Maintenance section of this Operator's Manual.
- Always keep a safe distance from all rotating and moving parts, for example, fan blades, V-belt drives, PTO shaft drives, fans, etc.
- Before starting work on the machine, always ensure safe blocking/support.
- Apply special care when working on the fuel system due to the increased danger of fire.
- Engine and exhaust system become very hot during operation and require cool-down time after machine is shut off. Avoid contact with hot parts. Wait for the machine to cool before touching components.
- Retainer pins can fly out or splinter when struck with force. Avoid striking the pins during operation, repair, or maintenance.
- Do not use starting fluid (for example, ether), especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.

Preparing for maintenance and repair work

- Prior to carrying out repair and maintenance work, always attach a warning label such as "Repair work—do not start machine!" to the control elements as a precautionary measure.
- Observe the startup and shutdown procedures set forth in this Operator's Manual. This applies to any work concerning the operation, conversion or adjustment of the machine and its safety-oriented devices, or any work related to inspection and maintenance.
- Prior to carrying out assembly work on the machine, stabilize the area under repair and use proper lifting and support devices to change parts weighing more than 9 kg (20 lbs.).
- Carry out maintenance work ONLY if:
  - the machine is positioned on firm and level ground
  - secured against unintentional movement
  - all hydraulically movable attachments and working equipment have been lowered to the ground
  - if the engine is stopped
  - if the starting key has been removed
  - the pressure accumulator is discharged
- Carry out maintenance work beneath a raised machine, attachments or additional equipment ONLY if a safe and secure support has been provided. The use of hydraulic rams or jacks as the sole method of support does NOT sufficiently secure raised machines or equipment/attachments!

Performing maintenance and repairs

- Observe the adjustment, maintenance and inspection activities and intervals set forth in this Operator's Manual, including information on the replacement of parts and partial equipment. These activities must be carried out only by qualified personnel.
- Disconnect the negative battery terminal when working on the electrical system.
- Do not allow the machine to be serviced, repaired, or test-driven by unauthorized personnel.
- If maintenance with the engine running cannot be avoided, lower the stabilizer blade and raise the control lever base.
- Wear a safety harness when performing elevated maintenance work. Keep all handles, steps, handrails, platforms, landings, and ladders free from dirt, snow and ice.

- Always use specially designed or otherwise safety-oriented ladders and working platforms to carry out overhead assembly work. NEVER use machine parts or attachments/superstructures as a climbing aid!
- Do not use the work equipment as lifting platforms for persons.
- In accordance with this Operator's Manual and instructions for the respective assembly, release the pressure in all system sections and pressure lines (hydraulic system) before carrying out any maintenance work.

2.11 Special Hazards

Battery

- In case of a frozen battery or of an insufficient electrolyte level, do not try starting the machine with battery jumper cables. The battery can burst or explode.
- Batteries contain caustic sulphuric acid. When handling the battery, observe the specific safety instructions and regulations relative to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially when charging. Always wear gloves and eye protection when working with batteries.
- Starting the machine with a battery jumper cable can be dangerous if carried out improperly. Observe the safety instructions regarding the battery.

Tracks

- Repair work on the tracks must be carried out only by trained technical staff or by an authorized workshop.
- Defective tracks reduce the machine's operational safety. Therefore, check the tracks regularly for cracks, cuts or other damage.
- Check track tension at regular intervals.

Electric energy

- Use only original fuses with the specified current rating.
- In case of electrical system malfunctions, switch off the machine immediately, disconnect the battery (by using the battery master switch), and carry out troubleshooting procedures.
- When working with the machine, maintain a safe distance from overhead electric lines! If work must be carried out close to overhead lines, the equipment and attachments must be kept well away from them.
- If the machine comes into contact with a live wire:
  - Immediately drive the machine out of the danger area.
  - Warn others against approaching and touching the machine.
  - Do not leave the machine until the line that has been touched or damaged has been safely de-energized!
- Make sure that work on the electric system is carried out only by a technician with appropriate training, in accordance with applicable electrical engineering codes.
- Inspect and check the electrical equipment of the machine at regular intervals. Defects such as loose connections or scorched cables must be repaired immediately.
- Observe the operating voltage of the machine/attachments. The voltages must be compatible (12 volts) and confirm that an appropriate fuse or circuit breaker is incorporated in the system to prevent damage from malfunction or short circuit.
- Always remove the grounding strap from the battery when working on the electric system.

Hydraulics

- Check all lines, hoses, and threaded couplers and fittings regularly for leaks and obvious damage. Repair any damage and leaks immediately. Splashed oil can cause injury and fire!

Noise

- Close all doors and windows if practical.
- Wear ear protection. This is especially important when performing hammer operations or working in enclosed areas.

MSDS

- When handling oil, grease, and other chemical substances such as battery electrolyte or hydraulic fluid, observe the product-related safety regulations (Material Safety Data Sheet (MSDS)).

2.12 Safety Guidelines while using Internal Combustion Engines

Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety guidelines could result in severe injury or death.

☞ *Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.*

Running the engine

When running the engine:

- Keep the area around exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.

When running the engine:

- Engine exhaust CAN KILL YOU IN MINUTES. Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell. Never run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Do not smoke while operating the machine.
- Do not run the engine near open flames.
- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- Do not operate a machine when its fuel cap is loose or missing.
- Do not remove the radiator cap when the engine is running or hot. The radiator fluid is hot and under pressure, and may cause severe burns!

Fueling the engine

When fueling the engine:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Replace the fuel tank cap after refueling.

When fueling the engine:

- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near an open flame

3 Operation

This chapter describes the controls, and contains information on the function and handling of the indicators and controls in the cab.

The pages stated in the table refer to the description of the controls.

A combination of digits, or a combination of digits and letters (e.g. 40/18 or 40/A) used for identifying the control elements, means:
fig. no. 40/control element no. 18 or position A in fig. no. 40

Figures carry no numbers if they are placed to the left of the text.

The symbols used in the description have the following meanings:

- This symbol stands for a list
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence

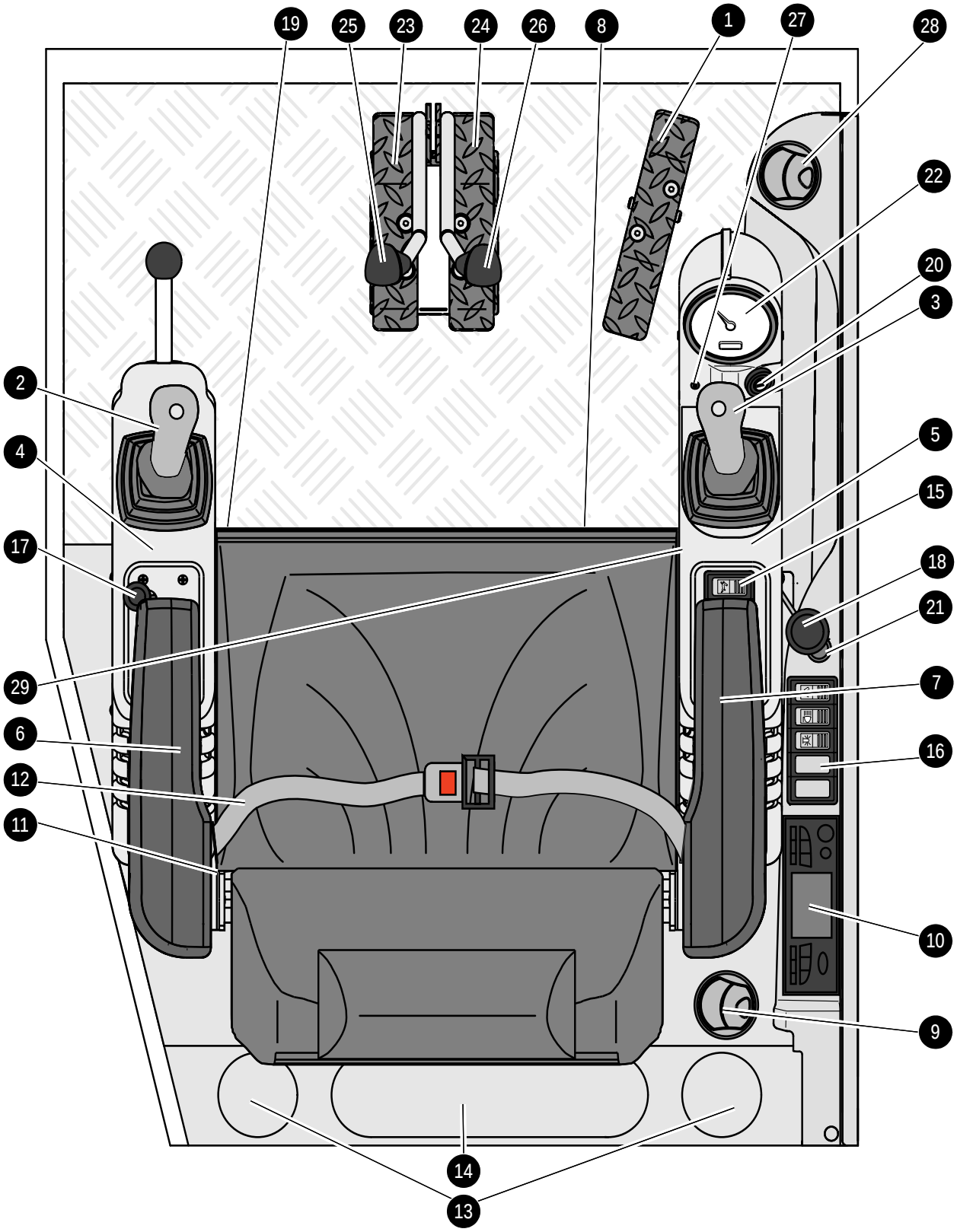
☞ *This symbol requires you to carry out the activity described*

➥ Description of the effects or results of an activity

n. s. = not shown

“Opt” = option

Stated whenever controls or other components of the machine are installed as an option.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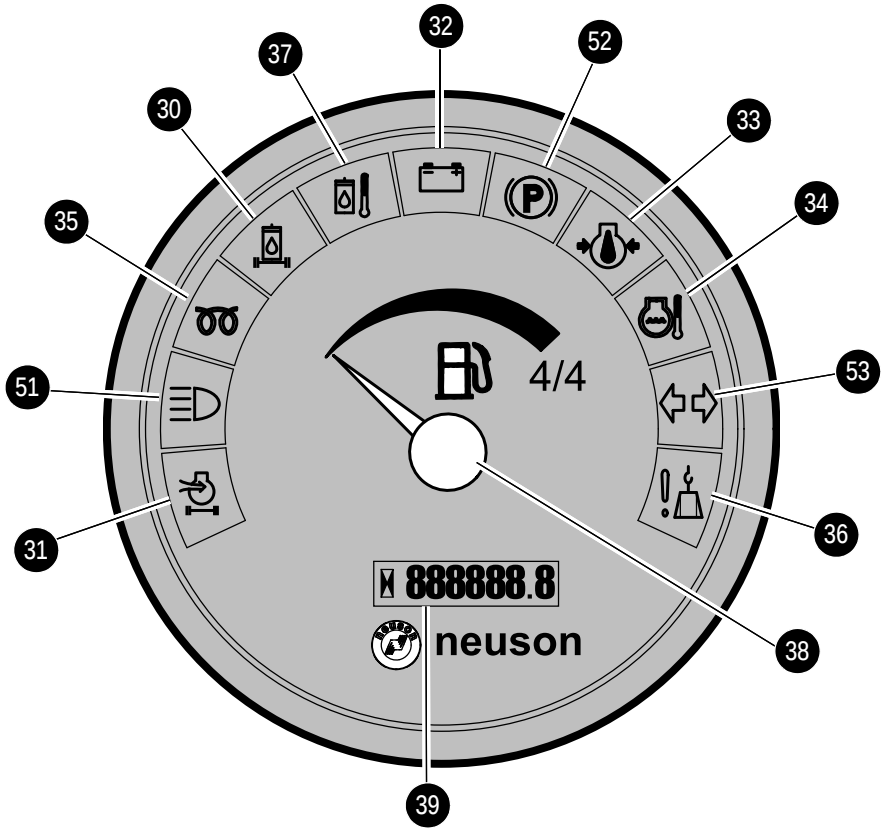
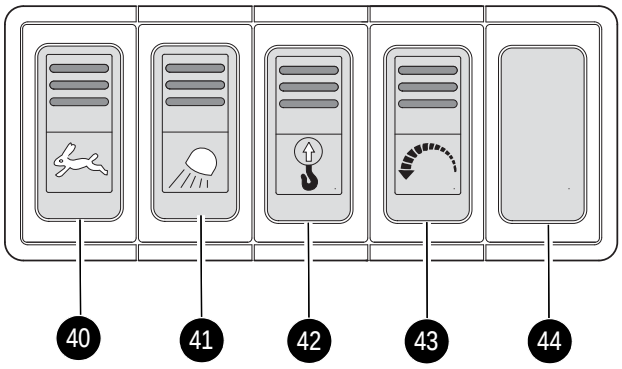
3.1 Cab overview

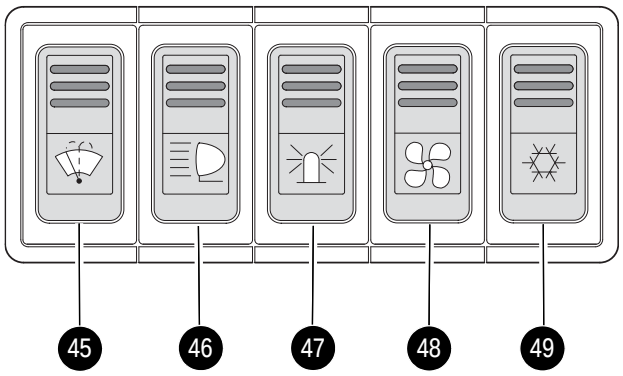
Pos.	Description	For more information see page
1	Hammer pedal	3-44
2	Control lever (left)	3-47
3	Control lever (right)	3-47
4	Control lever base (left)	
5	Control lever base (right)	
6	Armrest (left)	
7	Armrest (right)	
8	Lever (horizontal seat adjustment)	3-27
9	Air vent (rear window, on the right)	3-23
10	Radio (option)	
11	Seat (backrest adjustment)	3-27
12	Seat belt (lock)	3-28
13	Cup holder	
14	Bracket (storage box for documents)	
15	Console switch panel	3-22
16	Cab switch panel	3-22
17	Throttle	3-9
18	Stabiliser blade lever	3-20
19	Fuse box	6-3
20	Preheating start switch	3-9
21	Cigarette lighter	
22	Round display element	3-5
23	Drive pedal (left)	3-15
24	Drive pedal (right)	3-15
25	Drive lever (left)	3-15
26	Drive lever (right)	3-15
27	Drive interlock status indicator (option)	3-13
28	Front air vent	3-23
29	Drive interlock emitter/receiver unit	3-13



Control element on control console

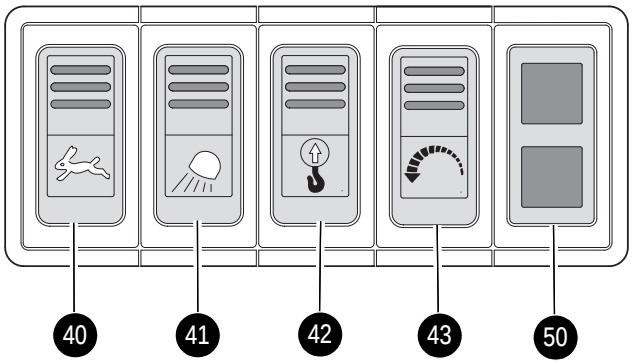


Control element on cab wall

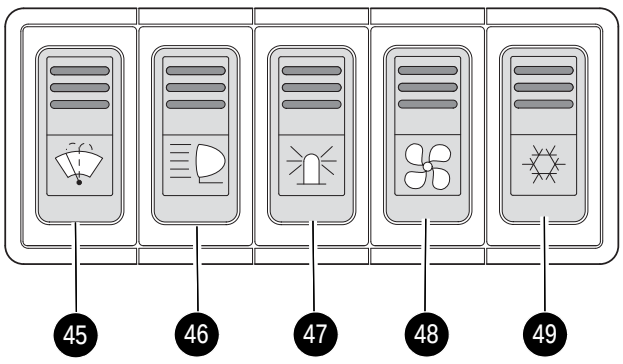


Control elements for proportional controls version (option):

Control element on control console



Control element on cab wall



3.2 Instrument panel overview

Pos.	Description	For more information see page
30	Iindicator (red) – hydraulic oil filter	3-10
31	Indicator (red) – air filter	3-10
32	Indicator (red) – alternator charge function	3-10
33	Indicator (red) – engine oil pressure	3-10
34	Indicator (red) – coolant temperature	3-11
35	Indicator (yellow) – cold starter	3-11
36	Indicator (red) – safe load indicator	3-11
37	Indicator (red) – hydraulic oil temperature	
38	Fuel level indicator	3-11
39	Hour meter	3-11
40	High speed	3-17
41	Working light	3-22
42	Safe load indicator (option)	3-67
43	Automatic revs setting (option)	3-67
44	Not assigned	
45	Washer system	3-24
46	Roof lights	3-22
47	Rotating beacon	3-23
48	Ventilation	3-23
49	Air conditioning (option)[1]	3-24
50	Proportional control status indicator (option)	3-49
51	Not assigned	
52	Not assigned	
53	Not assigned	

1. If equipped with air conditioning and proportional controls, switch assignment is the same as without proportional controls. The status indicator is then installed in the control console on the right.

Putting into operation

Slipping or falling hazard when entering or leaving the operator station.

☞ *Inspect and confirm that the handhold and steps are undamaged and free of mud and debris.*

☞ *Always use a three point technique with both hands and one foot supporting entry and exit at all times.*

☞ *Face the operator station when using the handholds and steps to enter and exit the machine.*

☞ *Only use the steps and handles provided when entering and leaving the cab.*

☞ *Never use the controls or movable lines and cables as handles.*

☞ *Never get on or off a moving machine!*

☞ *Never jump off the machine!*

Notice

Refer to the corresponding load diagrams for the boom.

Putting the machine into operation for the first time

Important information

- The machine may be put into operation by authorised staff only – *see chapter 2.5 Operator and Technician Qualifications and Basic Responsibilities* on page 2-3 and – *see chapter 2 Safety Information* on page 2-1 of this Operator's Manual.
- The staff must have read and understood this Operator's Manual before putting the machine into operation
- The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set forth in the Operator's Manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine.
- Go through the “Start-up” checklist in the following chapter

Running-in period

Handle the machine carefully during its first 50 operating hours.

The future performance and service life of the machine are heavily dependent on the observance of the following recommendations during the running-in period.

- Do not change engine revs abruptly
- Avoid using the machine under heavy loads and/or at high speeds.
- Avoid abrupt acceleration, braking and changing driving direction.
- Do not run the engine at high revs for extended periods
- Strictly observe the maintenance schedules in the appendix – *see chapter 5.15 Maintenance plan (overview)* on page 5-35

Check lists

The checklists below are intended to assist you in checking and monitoring the machine before, during and after operation.

These checklists cannot claim to be exhaustive; they are merely intended as an aid for you in fulfilling your duties as a conscientious operator.

The checking and monitoring jobs listed below are described in greater detail in the following chapters.

If the answer to one of the following questions is NO, first rectify the cause of the fault before starting or continuing work.

Start-up checklist

Check the following points before putting the machine into operation or starting the engine:

No.	Question	✔
1	Enough fuel in the tank? (➠ *5-2*)	
2	Coolant level OK? (➠ *5-8*)	
3	Water drained from the fuel prefilter? (➠ *5-4*)	
4	Engine oil level OK? (➠ *5-6*)	
5	Oil level in hydraulic tank OK? (➠ *5-17*)	
6	Water level in washer tank OK? (➠ *3-24*)	
7	V-belt condition and tension checked? (➠ *5-12*)	
8	Lubrication points greased? (➠ *5-24*)	
9	Tracks checked for cracks, cuts etc. ? (➠ *5-22*)	
10	Lights, signals, indicators, warning lights and indicators OK? (➠ *3-22*)	
11	Windows, mirrors, lights and steps clean?	
12	Control lever base folded down? (➠ *3-36*)	
13	Attachment safely locked? (➠ *3-58*)	
14	Engine cover safely locked? (➠ *3-32*)	
15	Especially after cleaning, maintenance or repair work: ➥ Rags, tools and other loose objects removed?	
16	Correct seat position? (➠ *3-26*)	
17	Seat belt fastened? (➠ *3-28*)	

Operation checklist

After starting the engine and during operation, check and observe the following points:

No.	Question	✔
1	Anyone dangerously close to the machine?	
2	Indicators for engine oil pressure and alternator charge function gone out? (➠ *3-10*)	
3	Temperature indicator for engine coolant in normal range? (➠ *3-11*)	
4	Drive pedals working correctly? (➠ *3-15*)	

Parking checklist

Check and observe the following points when parking the machine:

No.	Question	✔
1	Attachments lowered to the ground? (➠ *3-42*)	
2	Control lever base folded up? (➠ *3-36*)	
3	Cab locked, especially if the machine cannot be supervised? (➠ *3-31*)	
When parking on public roads:		
4	Machine adequately secured?	
When parking on slopes:		
5	Machine also secured with chocks under the tracks to prevent it from rolling away?	

3.3 Driving the excavator

Preheating start switch

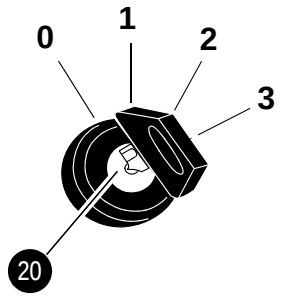


Fig. 1: Preheating start switch

Important!

The engine can only be started if the left-hand side control lever base is folded down.

Position	Function	Power consumer
0	Insert or remove the ignition key	None
1	ON/drive position	All functions are operational ➥ Indicators come on ➥ Shrill sound
2	Preheats the engine (10 – 15 seconds)	
3	Starts the engine	➥ Starter is actuated ➥ Indicators must go out

Throttle

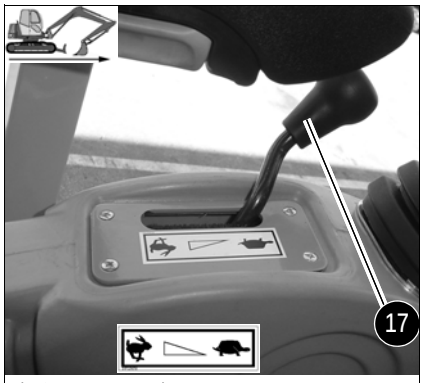


Fig. 2: Revs control

The throttle lever controls the revs as follows:

- Continuously (throttle lever 17)

Automatic revs setting (option)

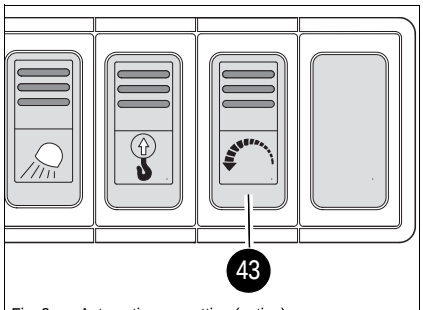


Fig. 3: Automatic revs setting (option)

Diesel engine revs are automatically reduced to idling after 5 seconds if no hydraulic functions are carried out and if the automatic revs setting (option) is enabled.

As soon as a hydraulic function is carried out with the control levers, diesel engine revs are automatically increased again to the engine speed adjusted with the throttle.

Automatic revs setting (option)		
ON	☞ *Press switch* 43 down	➥ Indicator in switch 43 comes on
OFF	☞ *Press switch 43* up	➥ Indicator in switch 43 goes out

Indicators and warning lights: overview

30 Indicator (red) – hydraulic oil filter

Indicates inadmissibly high pressure in the hydraulic reflux line to the tank. In this case:

☞ *Have the hydraulic oil reflux filter checked and, if necessary, replaced by an authorised workshop*

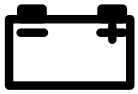
☞ *The indicator can come on briefly if the hydraulic oil is cold, but goes out again once operating temperature is reached*

31 Indicator (red) – air filter

Comes on if air filter is contaminated

☞ *Stop the machine*

☞ *Switch off the engine immediately and check the outside and inside filters*



32 Indicator (red) – alternator charge function

Notice

Possible engine damage. The coolant pump no longer runs if the V-belt is faulty. Engine may overheat or break down.

If the indicator light comes on with the engine running:

▶ Switch off the engine immediately.

▶ Have the cause repaired by an authorized service center.

The V-belt or the charging circuit of the alternator is faulty if the indicator comes on with the engine running. The battery is no longer charged.

33 Indicator (red) – engine oil pressure

Comes on if the engine oil pressure is too low. In this case:

☞ *Stop the machine*

☞ *Switch off the engine immediately and check the oil level*

The indicator comes on when the ignition is turned on and goes out as soon as the engine runs.

34 Indicator (red) – coolant temperature

Burn hazard. The engine coolant is under pressure at high temperature. Failure to observe specific instructions to check the coolant level in the radiator of the cooling system can cause serious injury from burns or pressure spray of the coolant.

☞ *Do not attempt to remove the radiator filler cap or drain the radiator coolant until the coolant temperature is less than 43°C (110°F).*

☞ *Stop the engine and wait at least 10 minutes or until the cap is comfortable to the touch before attempting removal.*

☞ *Wear protective gloves and eye protection.*

☞ *After determining the temperature is low enough to avoid burns, slowly turn the cap counterclockwise to the first notch stopping cap rotation. Wait to confirm that any pressure has been relieved. Depress the cap and continue to rotate the cap in a counterclockwise motion until the cap is free and can be removed.*

35 Indicator (yellow) – cold starter

Comes on if the key in the preheating start switch is in position 2.

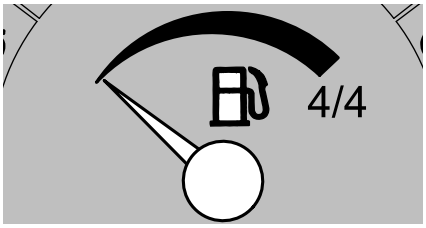
A glow plug preheats the air in the combustion chamber of the engine when the key is in this position.

36 Indicator (red) – safe load indicator (option)

This optical warning device tells the driver whether he has reached the admissible (pay)load or load moment according to the (pay)load diagram.

☞ *Reduce the load until the indicator goes out*

38 Fuel level indicator



39 Hour meter

Counts the engine service hours with the engine running.

Before starting the engine

☞ *Adjust seat position and rearview mirror – see Seat adjustment on page 3-26*

Important!

All controls must be within easy reach. You must be able to move the drive levers to their limit positions!

☞ *Fasten your seat belt – see Seat belt on page 3-28*

☞ *Fold the left-hand side control lever base down*

☞ *Check whether all levers and pedals are in neutral position*

☞ *Move the throttle to the centre position (between minimum and maximum) if the engine is cold*

Starting the engine: general

- The starter cannot be actuated if the engine is already running (start repeat interlock)
- Do not run the starter for more than 10 seconds
- Wait about 1 minute so the battery can recover before trying again

Procedure

Notice

Possible preheater damage. Actuating the preheating system too long can damage the preheater.

► Never preheat the engine more than 20 seconds

After you have completed the starting preparations:

☞ *Insert the ignition key in preheating start switch* 20

☞ *Turn the ignition key to position "*1*"*

☞ *Check whether all indicators come on:*

☞ *Replace defective indicators immediately*

☞ *Turn the ignition key to position "*2*" and hold it in this position for about 5 seconds*

➥ The intake air is preheated

☞ *Turn the ignition key to position "*3*" and hold it in this position until the engine starts*

➥ If the engine does not start after 10 seconds

☞ Interrupt the start procedure and try again after about 1 minute

➥ If the engine still does not start after the second try

☞ Contact a Neuson workshop for troubleshooting

➥ As soon as the engine runs:

☞ *Release the ignition key*

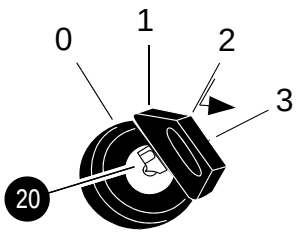


Fig. 4: Preheating start switch

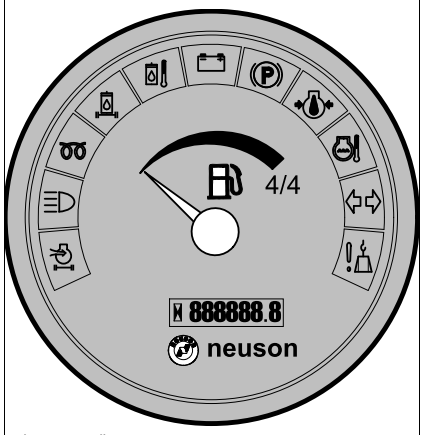


Fig. 5: Indicators

Starting with the drive interlock (option)

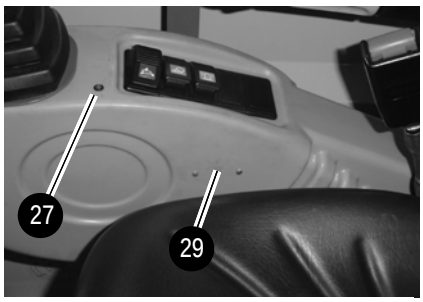


Fig. 6: Drive interlock

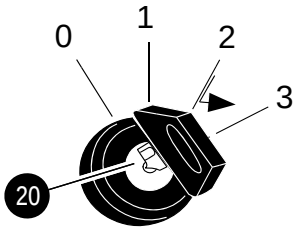


Fig. 6: Preheating start switch

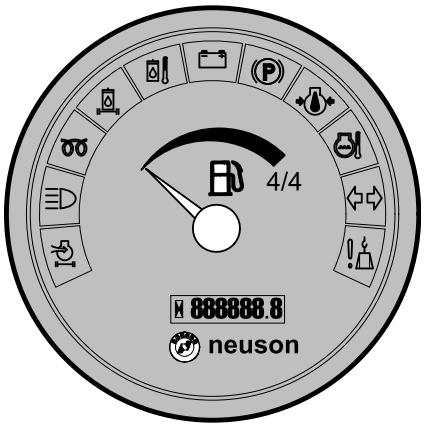


Fig. 6: Indicators

After you have completed the starting preparations:

☞ *Approach the transponder key to about 2 cm to the emitter/receiver unit* 29

☞ *The machine can be started as soon as the red indicator* 27 *goes out*

☞ *Insert the ignition key in the preheating start switch* 20 *within 30 seconds and*

☞ *Turn the ignition key at least to position "*1*"*

☞ *Check whether all indicators come on:*

☞ *Replace defective indicators immediately*

☞ *Turn the ignition key to position "*2*" and hold it in this position for about 5 seconds*

➥ The intake air is preheated

☞ *Turn the ignition key to position "*3*" and hold it in this position until the engine starts*

➥ If the engine does not start after 10 seconds

☞ Interrupt the start procedure and try again after about 1 minute

➥ If the engine still does not start after the second try

☞ Contact a Neuson workshop for troubleshooting

➥ As soon as the engine runs:

☞ *Release the ignition key*

Starting at low temperatures

☞ *Turn the ignition key to position "2" and hold it in this position for about 15 seconds*

➥ Engine is preheated

☞ *Turn the ignition key to position "*3*" and hold it in this position until the engine starts*

➥ If the engine does not start after 10 seconds

☞ Interrupt the start procedure and try again after about 1 minute

➥ If the engine still does not start after the second try

☞ Contact a Neuson workshop for troubleshooting

☞ *Release the ignition key*

When the engine runs smoothly (increased engine speed):

Important!

In general, a battery delivers less energy in cold conditions. Therefore make sure the battery is always well charged.

When the engine has started ...

☞ *Check whether all indicators have gone out:*

☞ *Let the engine warm up*

At cold temperatures:

☞ *Increase the engine revs slowly*

☞ *Do not run the engine at full load until it has reached its operating temperature*

Engine warm-up

After the engine has started, allow it to warm up at slightly increased idling speed until it reaches its operating temperature of 70 °C (coolant). Run the engine with no load during the warm-up phase (fold left-hand side control lever base up). During the warm-up phase, check for unusual noise, exhaust colour, leaks, malfunctions or damage. In case of malfunctions, damage or leaks, park and secure the machine, and find out the cause for the damage and have it repaired.

Jump-starting the engine (supply battery)

Safety instructions

Explosion hazard. A frozen battery may explode during a jump-starting operation.

☞ *Do not jump-start the engine if the battery is frozen.*

☞ *Dispose of the frozen battery in accordance with local environmental regulations.*

☞ *Replace the battery.*

Possibility of equipment damage or injury from improper jump-starting.

☞ *Make sure the jumper cables are rated for 12 V and the maximum CCA rating of the battery.*

☞ *The cable clamping ends shall be colored red for positive post connectors, and black for the negative post connectors.*

☞ *To avoid sparking, the excavator must not touch the jump-starting vehicle when connected with jumper cables.*

☞ *Use a 12 volt source, either in the form of another battery or a charger equipped for jump starting. Using higher or lower voltage sources can damage the electrical system and potentially cause injury.*

☞ *To avoid short circuits, the jumper cable connected to the positive + terminal of the starting battery must never be brought into connection with electrically conductive vehicle parts.*

☞ *Route the jumper cables so they do not become entangled in rotating components in the engine compartment.*

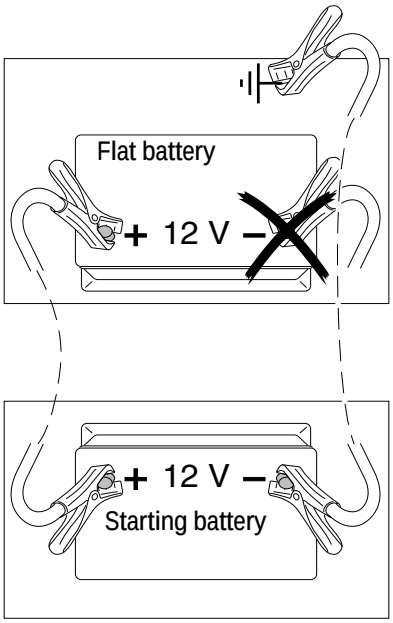


Fig. 7: Starting aid with jump leads

Procedure

☞ *Drive the jump-starting vehicle close enough to the machine so that the jump leads can reach to connect the two batteries*

☞ *Let the engine of the jump-starting vehicle run*

☞ *First connect one end of the red jump lead (+) to the + terminal of the flat battery, then connect the other end to the + terminal of the starting battery*

☞ *Connect one end of the black jump lead (–) to the – terminal of the starting battery*

☞ *Connect the other end of the black jump lead (–) onto a solid metal component fimly mounted on the engine block or onto the engine block itself. Do not connect it to the negative terminal of the flat battery, as otherwise explosive gas emerging from the battery can ignite if sparks are formed!*

☞ *Start the engine of the machine with the flat battery*

Once the engine has started:

☞ *With the engine running, disconnect both jump leads in exactly the reverse order (first remove the – terminal, then the + terminal) – this prevents sparking in the vicinity of the battery!*

Special instructions for driving on public roads

The machine is subject to the:

- Applicable legal regulations of your country

Also observe the applicable regulations for accident prevention of your country.

Moving off

Important!

The machine will not move off unless the left-hand side control lever ist folded down.

After starting the engine:

☞ *The alternator charge indicator goes out*

☞ *Press the drive pedal slowly*

➥ Machine moves off

Drive levers

Possible loss of machine control. Rotating through 180° (stabilizer blade now at the rear) inverts the drive lever functions.

☞ *Confirm the location of the stabilizer with respect to the operator station and compensate before attempting to move the machine.*

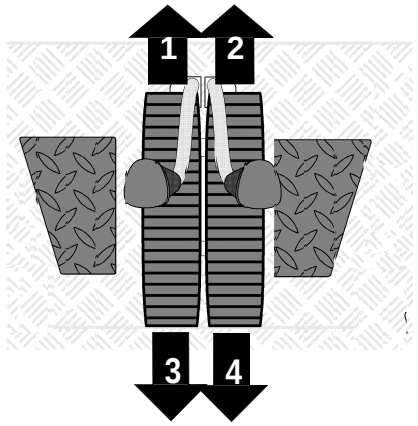


Fig. 8: Drive lever/drive pedal

The stabiliser blade side is the front side.

Raise the bucket and the stabiliser blade.

The machine can be moved either with the drive levers or with the pedals. Lock the upper carriage when travelling over longer distances.

Position	Function	
• 1 • 2	Push forwards Push forwards	Track excavator moves forwards
• 3 • 4	Pull backwards Pull backwards	Track excavator moves backwards
• 3 • 2	Pull backwards Push forwards	Track excavator turns to the left
• 1 • 4	Push forwards Pull backwards	Track excavator turns to the right

Forwards or reverse drive speed depends on the position of the drive levers or drive pedals.

Important!

Make sure both tracks move as you change direction, otherwise the rubber tracks are subject to increased abrasion.

High speed

The machine has two speed ranges which can be selected as follows:

☞ *Press switch 40 High speed 3-17,*

➥ The machine now moves at higher speed

The drive gear shifts to second speed after high speed is selected, the machine moves at higher speed. In case of increased resistance (grading, changing direction, travelling uphill), the drive gear shifts to the lower speed. The machine automatically shifts back to second speed is soon as there is no resistance.

Hydraulic brake

The pedals automatically return to their initial positions as soon as they are released, which creates sufficient hydraulic braking effect.

When driving downhill, the automatic hydraulic brake valves prevent the machine from “racing”. The machine does not run any faster than the admissible drive speed.

However, the automatic hydraulic brake valves in the undercarriage circuit no longer work properly if the diesel engine does not run at full revs.

Important!

Use the drive pedals to reduce the drive speed as required.

Mechanical brake

The stop brake and parking brake is designed as a spring-loaded and hydraulically actuated multidisc brake. This brake is automatically applied with a certain delay after having released the drive levers or the drive pedals.

3.4 Driving on slopes

Tip-over hazards. Follow these safety instructions carefully when operating on slopes.

Specific safety instructions

- ☞ *Raise the bucket approximately 20–30 cm (8–12 in.) off the ground as you move the machine. Avoid reversing downhill.*
- ☞ *When operating through hollows or crossing obstacles, keep the attachment close to the ground and drive slowly.*
- ☞ *Do not steer or operate across slopes.*
- ☞ *Change your operating direction on level ground. This may take more time but is a safer operating technique.*
- ☞ *When operating the machine, make sure you can stop safely if the machine starts to skid or if it becomes unstable.*
- ☞ *Swivelling or operating the attachment on slopes may cause the machine to lose balance and to tilt. Avoid this under all circumstances.*
- ☞ *Rotating the upper works when operating downhill with a full bucket is especially dangerous. Should this be nevertheless necessary, create a platform of level ground so that the machine can work on the flat level surface.*
- ☞ *Do not operate on slopes over 15°, otherwise the machine can tip.*
- ☞ *If the sliding blocks slip as you operate uphill and if it is no longer possible to move on with the force of the tracks alone, do not apply pressure with the boom to ease on the machine!*

Driving on slopes

Proceed as follows to prevent the machine from tipping over or slipping sideways.

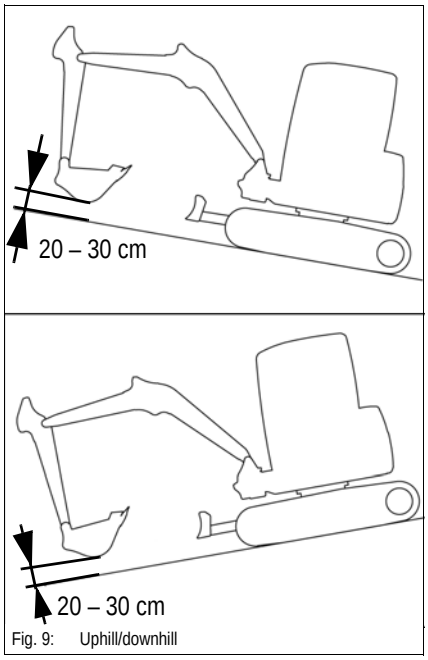


Fig. 9: Uphill/downhill

- ☞ *Keep the attachment about 20 – 30 cm (7.9'' - 11.8'') above the ground. In an emergency, lower the attachment immediately to the ground so you can stop the machine more easily.*

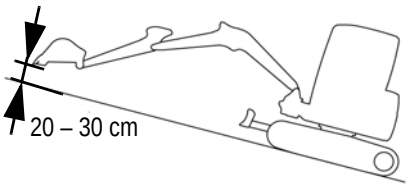


Fig. 10: Uphill, attachment above the ground

☞ *Place the cab with the front side upwards as you drive uphill, and downwards as you drive downhill. Always check the ground's firmness underneath the front part of the machine as you drive.*

☞ *When driving downhill, extend the attachment to improve stability, and keep it about 20 – 30 cm (7.9'' - 11.8'') above the ground. Drive slowly.*

☞ *Reduce engine speed when driving downhill, keep the drive lever next to neutral position and drive slowly.*

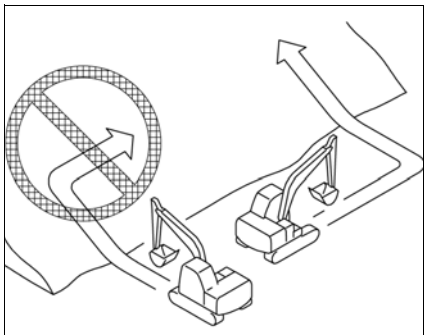


Fig. 11: Driving diagonally or at an angle

☞ *Always drive straight ahead when driving uphill or downhill. Driving diagonally or at an angle to the slope is very dangerous.*

☞ *Never change direction on slopes or drive across slopes. Always change position on level ground before continuing to drive on a slope.*

☞ *Drive slowly in meadows, on leaves or wet steel plates. The machine can slip even if the ground is level. If the engine stops as you drive across a slope, immediately put the control levers to neutral position and start the engine again.*

Stabiliser blade operation

Possible loss of machine control. Stabilizer blade lever is unprotected and can be moved unintentionally.
☞ *Avoid moving the stabilizer blade lever inadvertently.*

Notice

Possibility of equipment damage. Lowering the stabilizer blade too deeply into the ground may create resistance.

☞ *Slightly raise the stabilizer blade.*

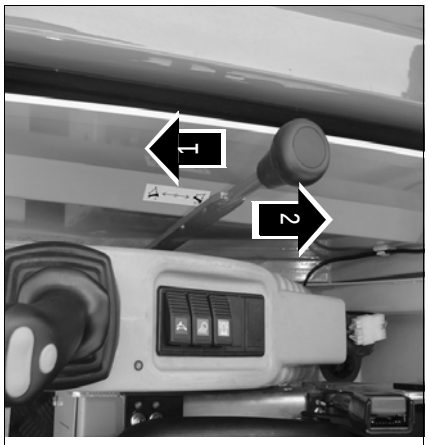


Fig. 12: Stabiliser blade operation

Position	Function	
• 1	Push forwards	Stabiliser blade is lowered
• 2	Pull backwards	Stabiliser blade is raised

Important!

Check the position of the stabiliser blade before driving the machine.

Parking the machine

Possibility of inadvertent machine movement. To avoid unintentional movement of the machine once it has been parked:

☞ *Park the machine on level, stable ground.*

☞ *Place stop chocks at the ends of the rubber track.*

Stop the machine

☞ *Lower the bucket and the stabiliser blade to the ground*

☞ *Reduce engine speed completely*

☞ *Switch off ignition*

☞ *Fold up the control lever base*

Notice

Possible engine damage due to overheating.

- ► Never switch off the engine under full load.
- ► Except in case of emergency, always make sure the engine can cool down before it is switched off.
- ► Let the engine run at idling speed with no load for at least 5 minutes before you switch it off.

Important!

Secure the machine against unauthorized operation.

- Lock the cab

Parking the machine on slopes

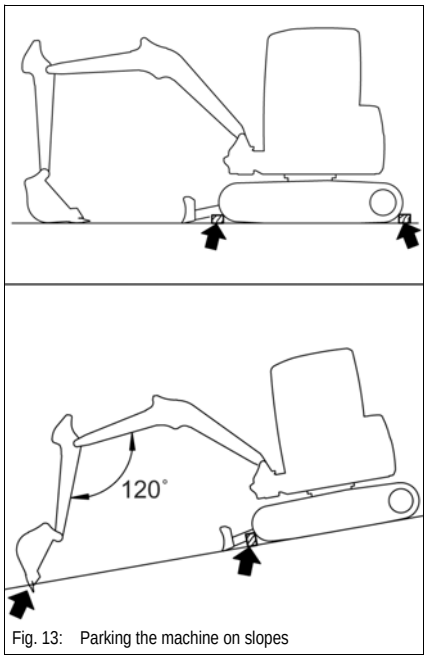


Fig. 13: Parking the machine on slopes

☞ *Avoid stopping the machine abruptly. Always make sure there is enough space for stopping the machine.*

- Park the machine on level ground with sufficient bearing capacity. Never park on slopes. If you cannot avoid parking the machine on a slope:

  ☞ Place chocks under the track tracks and lower the attachment *into* the ground to prevent the machine from moving.
- Severe accidents can be caused by unintentionally actuating the control levers, and hence moving the attachment or the entire machine.

  ☞ Always fold the control lever base up before leaving the seat.

☞ *Place the stabiliser blade downhill and lower it to the ground.*

Light system

Fig. 14: Light system switches

The switch panel for the light system is located on the instrument panel.

Boom light		
ON	☞ *Press switch* 41 down	➥ Indicator in switch 41 comes on
OFF	☞ *Press switch 41* up	➥ Indicator in switch 41 goes out

Roof lights (option)

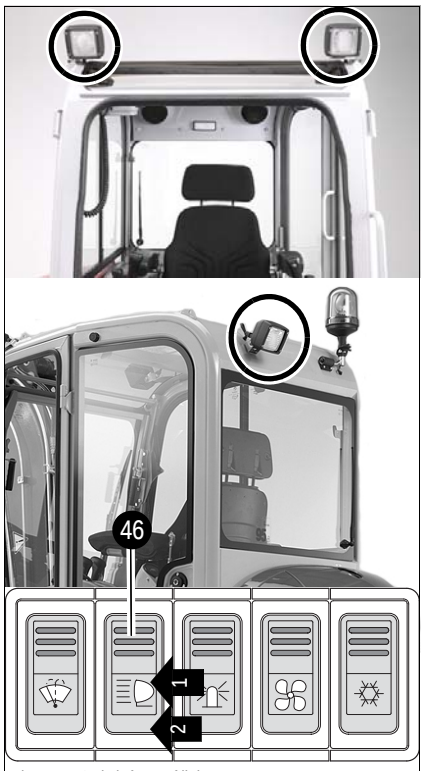


Fig. 15: Switch for roof lights

Traffic accident hazard. Working lights can temporarily blind motorists on public roads.

☞ *Do not switch on the working lights when traveling on public roads.*

☞ *When operating the machine near public roads, only switch the working lights on when there is no possibility of blinding passing motorists.*

Roof lights		
ON	☞ *Press switch 46 to the 1st position* ☞ *Press switch 46 to the 2nd position*	➥ Indicator in switch comes on
OFF	☞ *Press switch 46* up	➥ Indicator in switch goes out

Interior light

Fig. 16: Switch for interior light

Interior light	
ON	☞ *Press switch to the left or right*
OFF	☞ *Move switch to centre position*

Rotating beacon (option)

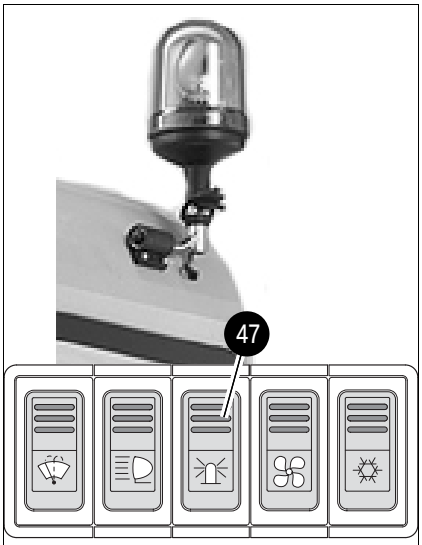


Fig. 17: Switch for rotating beacon

Rotating beacon (option)		
ON	☞ *Press switch 47 down*	➥ Indicator in switch comes on
OFF	☞ *Press switch 47 up*	➥ Indicator in switch goes out

Important!

Observe the legal regulations of your country for operating the rotating beacon.

Cab heating and ventilation

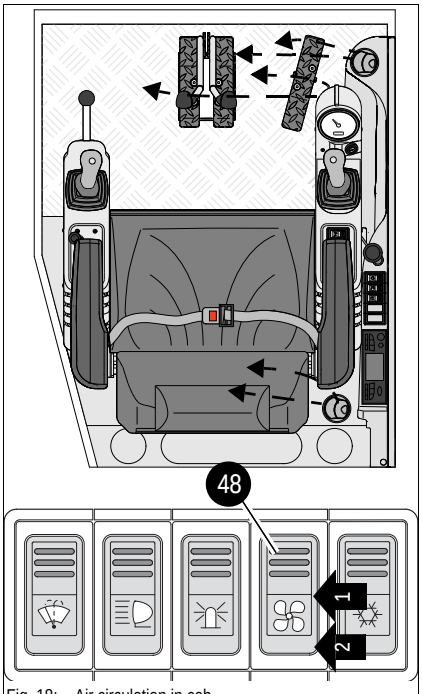


Fig. 18: Air circulation in cab

Important!

The cab is fitted with five air nozzles. Each nozzle can be closed and directed separately. In order to achieve best results for defrosting the front window, open both front right nozzles and the leg room nozzle.

- Direct the nozzles to the front window
- Open or close the nozzles as required to vent or heat the cab.
- Do not place flammable or explosive material or objects near the nozzles.
- Air the cab from time to time

Ventilation (fresh air)		
1st speed	☞ *Press switch 48 down one step*	➥ Low fan speed
2nd speed	☞ *Press switch 48 down two steps*	➥ High fan speed
OFF	☞ *Press switch 48 all the way down*	➥ Fan OFF

Heating adjustment

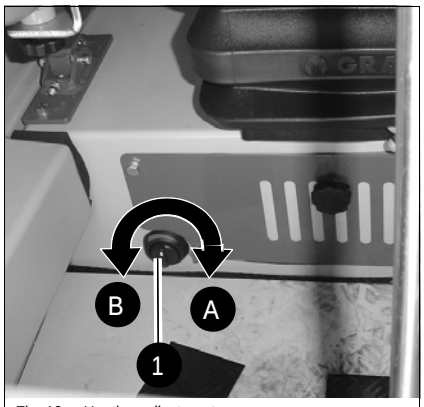


Fig. 19: Heating adjustment

Adjust cab temperature as follows:

- Cooling:

☞ *Turn heater valve 1 towards A until you reach the required temperature.*

- Heating:

☞ *Turn heater valve 1 towards B until you reach the required temperature.*

Important!

In order to reach the required temperature quickly, we recommend carrying out only small changes of the setting on control valve *1,* otherwise it takes some time for the air in the cab to reach the required temperature.

Washer system

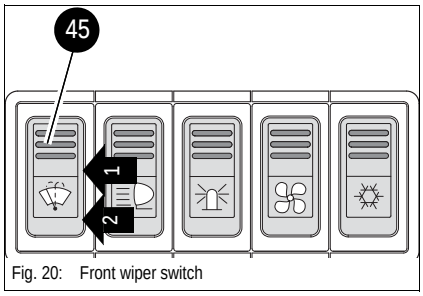


Fig. 20: Front wiper switch

Front window wiper		
ON	☞ *Press switch 45 down*	➥ Front wiper is on
OFF	☞ *Press switch 45* up	➥ Front wiper returns to base position
1st speed	☞ *Press switch 45 down to the 1st position*	➥ Front wiper is on
2nd speed	☞ *Press switch 45 down to the 2nd position*	➥ Pump sprays washer water on the window

Important!

Do not actuate the washer system with the front window folded up. Do not actuate the washer system if the tank is empty, otherwise this can damage the electric pump.

Tank for washer system

Fig. 21: Tank for washer system

The tank's filler inlet is located in the engine compartment.

Important!

Fill with clean tap water only!
Add a suitable cleaning agent if required.
In winter: add antifreeze for washer systems to the water.
Refer to the antifreeze instructions for further information on concentrations.
The rubber diaphragm in the non-return valve in the housing conglutinates if stored in a dry condition over a longer period of time. In order to restore this valve's function, moisten this non-return valve, dip it briefly in water and then blow air through it.

Air conditioning (option)

- In order to achieve best cooling results:

☞ *Open both nozzles on the left and right behind the seat and direct them to the roof. Keep all other nozzles closed.* *– see Cab heating and ventilation on page 3-23*

➥ This setting ensures good air circulation in the cab as the cool air flows to the cab floor

☞ *The other nozzles can be opened and closed as required.*

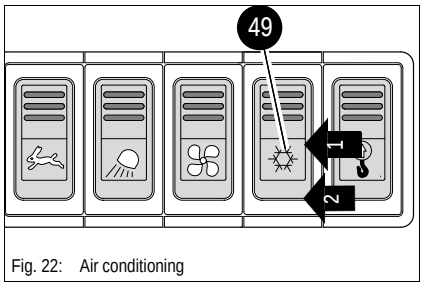


Fig. 22: Air conditioning

- Air the cab from time to time

Air conditioning		
ON	☞ *Press switch 49 down*	
OFF	☞ *Press switch 49* up	
1st range	☞ *Press switch 49 (ventilation) 1 step down*	➥ Low fan speed
2nd range	☞ *Press switch 49 (ventilation) 2 steps down*	➥ High fan speed

Important!

Let the air conditioning system run once a month for at least 10 – 15 minutes to ensure its full function and efficiency. At cold outside temperatures, turn the valve in the engine compartment to winter operation.
– *see Heating adjustment* on page 3-24

Recirculated air mode

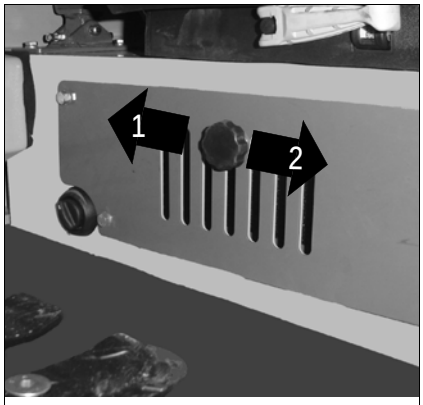


Fig. 23: Recirculated air mode

Position	Function	
1	Release the button and slide to the left	Recirculated-air mode switched off
2	Release the button and slide to the right	Recirculated-air mode switched on

In recirculated-air mode, the air in the cab is taken in and cooled, and a small amount of fresh air is added. If recirculated-air mode is switched off, only fresh air is used for heating, ventilating or cooling the cab.

Important!

Open the windows and the door to allow hot air to escape. Then switch on air conditioning, and close the windows and the doors. Keep all windows and doors closed to achieve best cooling results.

Seat adjustment

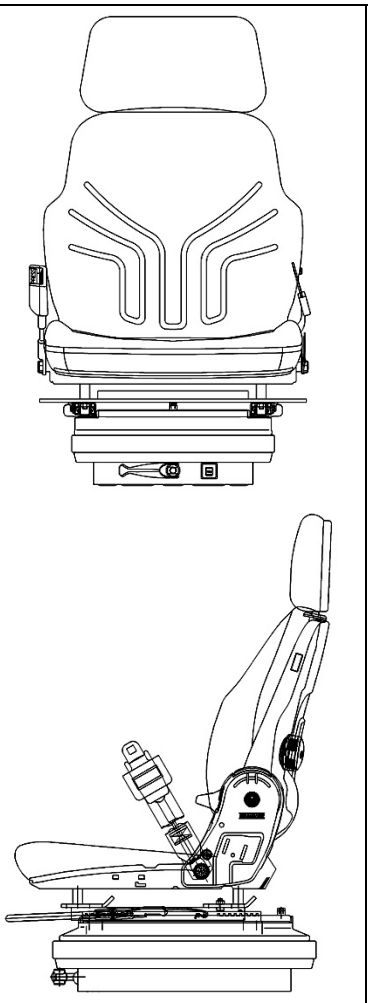


Fig. 24: Seat adjustment

Possible loss of machine control while adjusting the seat.

☞ *Do not adjust the seat position during machine operation or travel.*

☞ *Adjust the seat before moving the machine.*

☞ *See “ Before starting the engine.'*

Notice

Possible window damage from adjusting the backrest.

- ▶ Make sure the backrest does not touch the rear window or the removable part of the front window as you adjust backrest inclination.
- ▶ Select a seat position which will not damage the window panels when working with the machine.

Weight adjustment

Important!

Adjust the seat suspension correctly to ensure a high level of ride comfort. Use the lever to adjust the seat suspension.
The weight indicator shows the weight adjusted (kg).

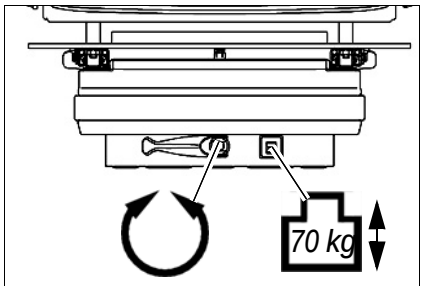


Fig. 25: Weight adjustment

☞ *Sit down on the seat*

To adjust to a higher weight:

☞ *Turn the lever to the left*

To adjust to a lower weight:

☞ *Turn the lever to the right*

Height adjustment

Upwards:

☞ *Raise the seat until you hear an audible click*

Downwards:

☞ *Raise the seat as far as it will go, then*

☞ *Lower the seat to the lowest position*

Horizontal adjustment

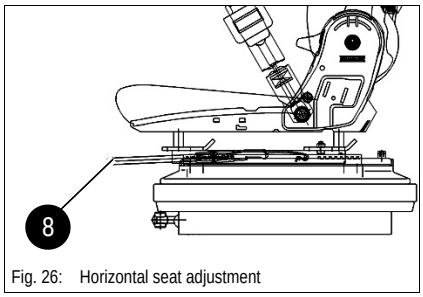


Fig. 26: Horizontal seat adjustment

☞ *Sit down on the seat*

☞ *Pull lever 8 upwards and at the same time*

☞ *Move the seat forwards or backwards*

Backrest adjustment

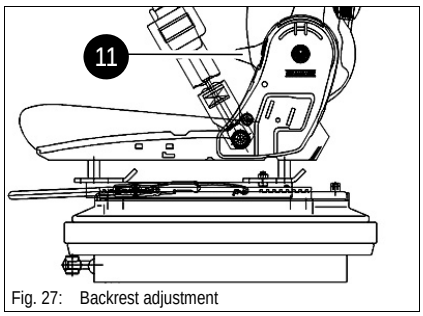


Fig. 27: Backrest adjustment

☞ *Sit down on the seat*

☞ *Pull lever 11 upwards and at the same time*

☞ *Lean back to push the backrest into the required position*

☞ *Let lever 11 lock into place*

Seat belt

Personal injury hazard. The seat belt provides positive support in the operator seat during operation and travel that keeps the operator located within the comfort zone for control operation. It also reduces the risk of injury in the event a tipping incident occurs during use.

☞ *Always buckle up before moving or working with the machine.*

☞ *Seat belt must not be twisted.*

☞ *Seat belt must run over the hips – not over the stomach – and must always be applied tightly.*

☞ *Do not place the seat belt over hard, edged or fragile items (tools, meter rule, glasses, pen) carried inside your clothes.*

☞ *Never buckle up 2 persons with one seat belt.*

☞ *Check seat belts each time the operator uses the machine. Have damaged parts immediately replaced by an authorized workshop before using the machine.*

☞ *Always keep the seat belt and buckle clean, as dirt and debris can cause the buckle to malfunction and accelerate internal webbing abrasion in the belt.*

☞ *Seat belt buckle must not be obstructed by foreign bodies (paper or similar); otherwise the buckle latch cannot lock into place!*

Personal injury hazard. The seat belt strap will be stretched after an accident and is no longer serviceable.The seat belt will NOT provide adequate protection in the future!

☞ *Replace the seat belt after an accident.*

☞ *Have fastening points and seat fixture examined for damage or failure. Repair or replace if damaged.*

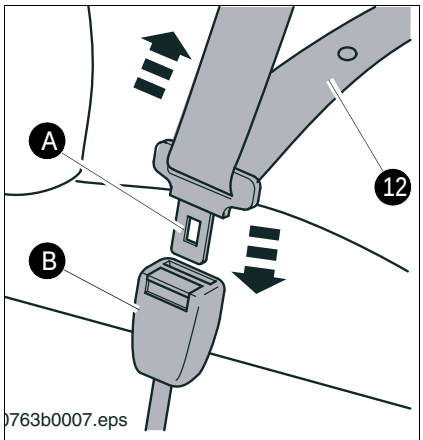


Fig. 28: Fastening the seat belt

Seat belt 12 is for the driver's safety during work on construction sites and during road travel.

Fastening the seat belt:

☞ *Fasten seat belt 12 as follows before moving the machine:*

- Hold belt on buckle latch A and run it slowly and steadily over the hips to buckle B

- Insert buckle latch A into buckle B with an audible click (pull test)
- Tighten the seat belt by pulling at its end

  ➥The seat belt must always be tightly in place over the hips!

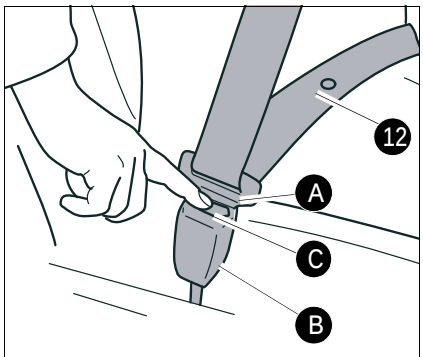


Fig. 29: Unfastening the seat belt

Unfastening the seat belt:

☞ *Unfasten seat belt 12 as follows:*

- Hold the seat belt
- Press red switch C on buckle B

  ➥Latch A is released from buckle B by spring pressure
- Slowly return the seat belt to the retractor

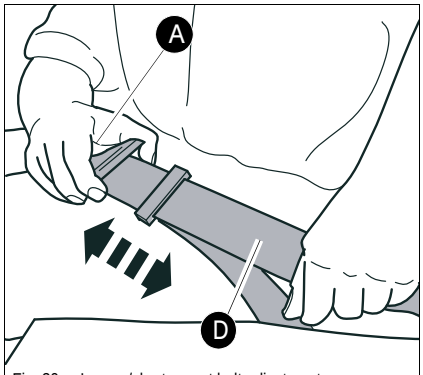


Fig. 30: Longer/shorter seat belt adjustment

Longer/shorter lap belt adjustment:

☞ *Lengthen the lap belt as follows:*

- Hold buckle latch A at a right angle to the seat belt and pull the seat belt to the required length
- To shorten the lap belt, just pull the free end D of the belt

Emergency exit

You can enter and exit the cab through the side and front windows in an emergency.

Personal injury hazard. Do not use the side or front window as routine exits from the machine. Windows are to be used as exits only if the access opening (door for cab option) is blocked or cannot be opened through normal operating procedures.

☞ *The controls are active if the engine is not stopped. Inadvertent control movement with the engine running during an emergency exit can increase the risk of injury. Stop the engine before exiting through an emergency exit.*

☞ *Enter and exit the cab through the side and front windows in an emergency only!*

Opening the side window completely:

☞ – *see Opening the side window: on page 3-32*

Opening the front window completely:

☞ – *see Front window on page 3-30*

Front window

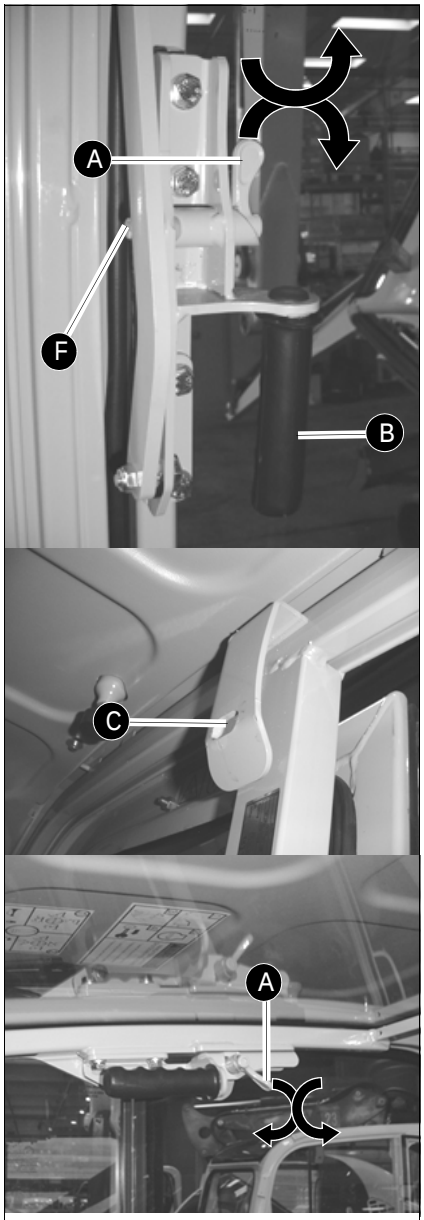


Fig. 31: Front window

☞ Crush hazard. Sliding window can pinch or crush extremities.

☞ Keep extremities and clothing free of the window run.

Always pull the front window upwards with both handles *B*.

Always let levers *A* lock into place on either side in locks F.

Important!

Fold up the control lever base before opening or closing the front window, in order to avoid any unintentional operation or movement of the machine!

Open the front window as follows:

- Either side of the front window is fitted with a lever

☞ *Push levers A down on either side*

☞ *Pull the front window upwards with handles B*

➥ The front window must lock into rails C on either side

☞ *Lock with levers A on either side in C*

☞ Pull levers A to the rear to do this

☞ Check whether both levers A are actually locked in rails C

Fold down the front window as follows:

☞ *Push levers A forwards on either side*

☞ *Pull the front window downwards with handles B*

☞ *Lock the front window again by means of levers* A in lock F

☞ Pull levers A upwards to do this

☞ Check whether both levers A are actually locked in rails F

Door

Possibility of equipment damage or injury to others. An open door on a moving machine may slam against the machine, damaging the door frame or window glass. The door may also strike nearby objects or people.

☞ *Always make sure that doors and windows are securely closed before moving the machine.*

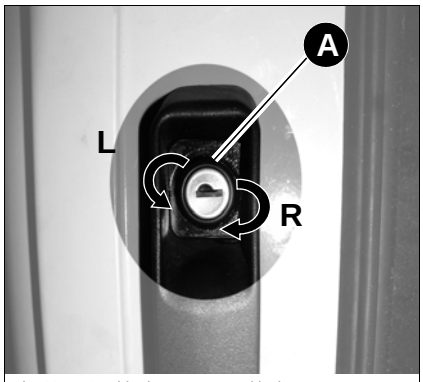


Fig. 32: Outside door opener and lock

Opening the door from the outside:

☞ *Press door lock A*

Locking the door:

☞ *Turn the key in door lock A to the **left** (L)*

☞ The door is locked

Unlocking the door:

☞ *Turn the key in door lock A to the **right** (R)*

☞ The door is unlocked

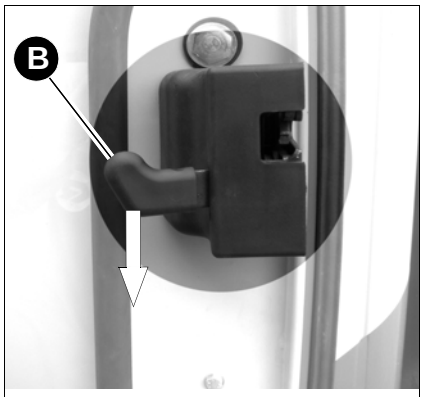


Fig. 33: Inside door opener (left/right)

Opening the door from the inside:

☞ *Press the lever on the inside left on door lock B down*

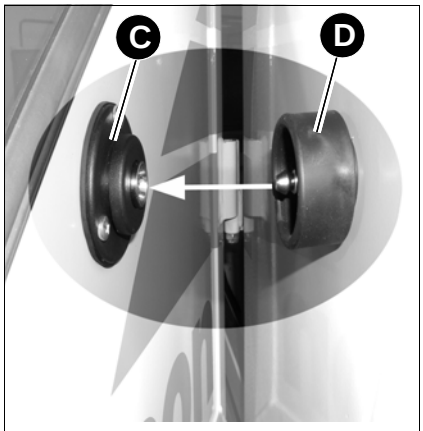


Fig. 34: Door arrester

Securing an open door:

☞ *Press the door against bracket C of arrester D with an audible click*

Fig. 35: Releasing the door arrester

Releasing the door opener:

Pull button E to release the door from the arrester.

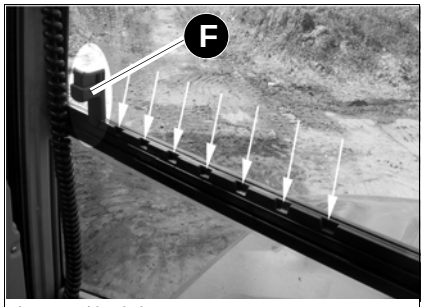


Fig. 36: Side window

Opening the side window:

☞ *Press button F up*

☞ At the same time, move the window to one of the positions marked with seven arrows

Engine cover

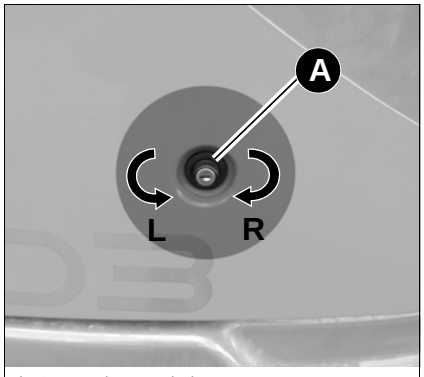


Fig. 37: Engine cover lock

Opening:

☞ *Press lock A*

☞ *Pull the engine cover upwards*

Closing:

☞ *Firmly press down the engine cover until lock A engages with an audible click*

Locking and unlocking:

Close the engine cover with the ignition key of the preheating start switch.

☞ *Turn the ignition key in lock A to the* left *(*L*)*

➥ Engine cover locked

☞ *Turn the ignition key in lock A to the* right *(*R*)*

➥ Engine cover unlocked

Battery master switch (model 38Z3)

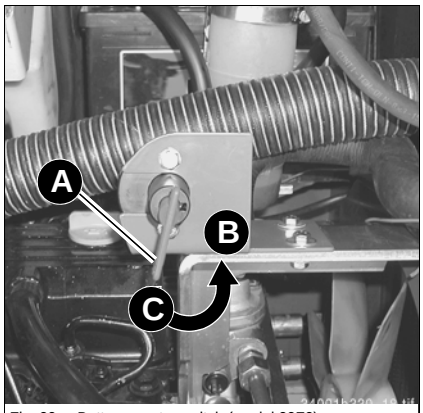


Fig. 38: Battery master switch (model 38Z3)

Important!

Do not disconnect the battery while the engine is running.

Important!

Power supply is interrupted directly after the battery, by means of a key

- *Before working on the electric system*
- *As an antitheft precaution*

Interrupting power supply:

☞ *Turn key A of the battery master switch to position B and remove it*

Switching on power supply:

☞ *Insert key A in the battery master switch*

☞ *Turn the key down to the notched position C*

Tilting the cab

Personal injury hazard. Using improper techniques to tilt the cab can cause personal injury. Follow the precautions below when tilting the cab:

☞ *Always tighten lock screws A and C when driving and working with the machine.*

☞ *Place the excavator on level ground before tilting the cab.*

☞ *Lower the boom and the stabilizer blade before tilting the cab.*

☞ *Stop the engine and remove the starter key before tilting the cab.*

☞ *Stay clear from underneath the cab as you tilt it.*

- Fold the control lever base (left) up.

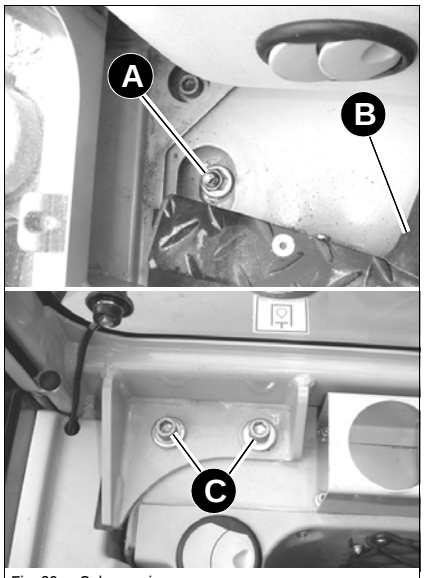


Fig. 39: Cab securing screws

Slacken the lock screws

Unscrew the lock screw as follows:

☞ *Switch off the engine*

☞ *Remove the ignition key*

☞ *Fold the control lever base (left) up*

☞ *Raise floor mat B*

☞ *Unscrew lock nut A with a suitable tool*

➥ Lock nut A is located at the front right of the cab

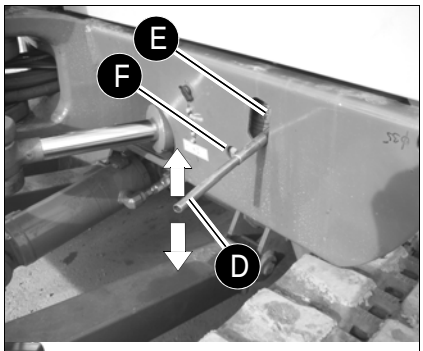
☞ *Unscrew lock nuts C with a suitable tool*

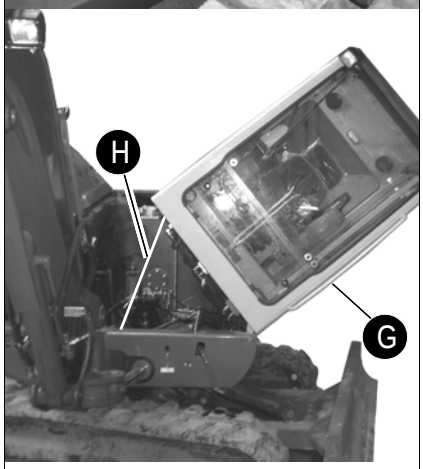
➥ Lock nuts C are located at the rear right of the cab

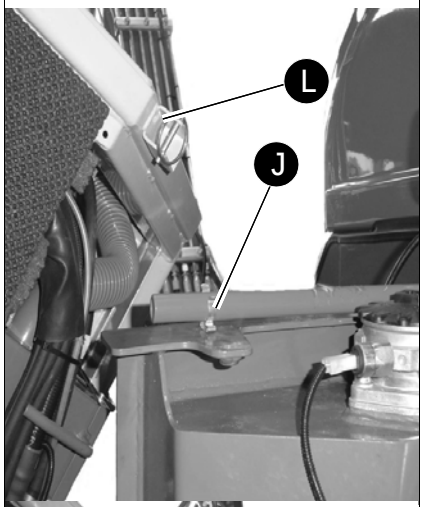
Personal injury hazard. An open door can strike nearby objects or people as the cab is being tilted.

☞ *Always close the door, even if the door is secured in the open position with the door arrester before tilting the cab.*

☞ *Should the door be open as you tilt the cab, do not actuate the door opener unintentionally .See Releasing the door opener on page 3-36.*







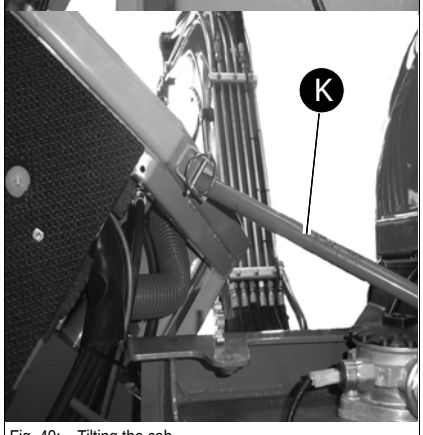


Fig. 40: Tilting the cab

Tilting the cab:

Proceed as follows:

☞ *Insert tube D on valve F*

☞ *Turn tube D clockwise (to the right)*

☞ *Insert tube D onto guide pin E and pump as far as it will go*

➥ (jack function)

➥ The cab is raised as far as the pump will go

☞ *Now place yourself beside the machine to tilt the cab completely*

☞ *Pull handle G until the cab is completely tilted beyond the centre of motion*

➥ The cab is secured with safety cable H

☞ *Pull tilt rod K out of bracket J*

➥ Slide tilt rod K into guide L

➥ Secure tilt rod K with the split pin in guide L

Tilting the cab down:

Notice

Make sure the piston of the lift pump is fully extended and that the valve is closed before lowering the cab.

► Turn valve F of the lift pump clockwise (to the right).

Proceed as follows:

☞ *Remove the split pin from guide* L

➥ Slide tilt rod K into bracket J

☞ *Use handle G to lower the cab until it is back on the pump*

☞ *Insert tube D on valve F*

☞ *Slowly turn tube D counterclockwise (to the left)*

➥ The cab is lowered by its own weight

☞ *Screw in lock screws A (front) and B (rear) with a suitable tool*

Notice

Possibility of severe cab bearing damage. Once the cab is fully lowered by its own weight, do not close the valve of the lift pump.

☞ *Leave valve F open after you have lowered the cab*

Notice

Possibility of equipment damage from cracks and cuts. Check tilt rod K, the split pin of safety cable H, and the fastening of the safety cable at regular intervals.

► Replace defective parts immediately.

Exit through the door

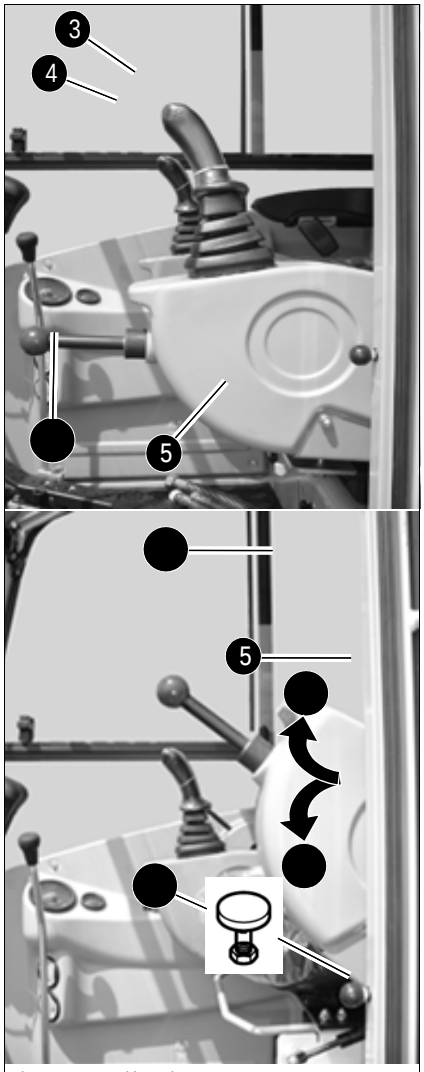


Fig. 41: Control lever base

Adjusting the left-hand side armrest

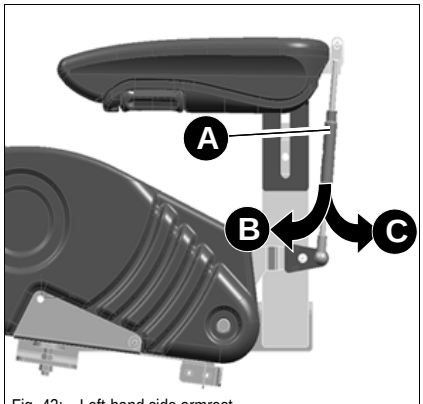


Fig. 42: Left-hand side armrest

Personal injury hazard. Before entering or leaving the operator station confirm that the stepping surfaces are clean and firm to avoid slipping or tripping.

☞ *Take the following steps before leaving the cab:*

- Stop the machine and follow the parking procedures provided in "Parking the machine" 3-21.
- Move all controls to neutral.

☞ *Raise control lever base 4 with handle A to position B*

➥ The gas strut keeps the control lever base in the top position.

Personal injury hazard. The control lever and console are not designed as a hand hold for exiting the cab.

☞ *Do not use the control handle in the console for assistance entering or leaving the cab.*

☞ *Use the hand hold brackets positioned at the front and rear of the cab door opening for support.*

➥ Fold control lever base *5* down to position C once you are in the cab

➥ The gas strut keeps the control lever base in the lower position

Important!

The height of the control lever base can be set with stop bolt D

Important!

Enter and leave the cab only through the door as a rule. You can enter and exit the cab through the front and the right-hand side window in an emergency.

Notice

Possibile loss of machine control from bumping the control lever.

▶ Make sure the armrest does not touch the control lever as you fold it up.

▶ Adjust the armrest accordingly.

Adjust the left-hand side armrest as follows:

☞ *Turn tubular turnbuckle nut A to the left B*

➥ The armrest can be lowered

☞ *Turn nut A to the right C*

➥ The armrest can be raised

Towing the track excavator

Safety instructions:

- Make sure the excavator can be towed safely
- Use towing bracket *A* for towing the machine
- Use the towing bracket only for towing the machine
- Use a shackle pin with a lock pin
- Move off slowly!
- Make sure no-one is close to the towing equipment (towing bar, cable).

Towing

Personal injury hazard. Use extreme caution during towing operations.

☞ *Keep people away from the danger zone around the towed and towing machine*

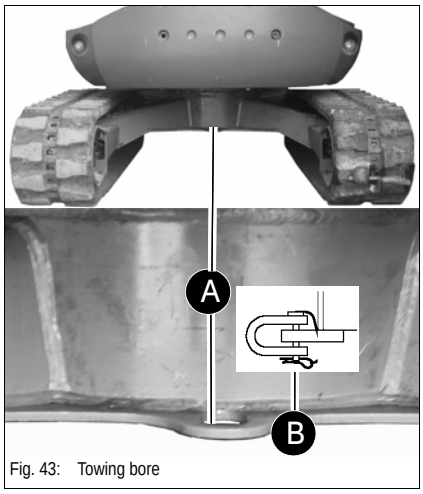


Fig. 43: Towing bore

Notice

Do not exceed the maximum admissible load of the towing bracket.

► The towing bracket has a maximum admissible load of 2330 daN (5238 lbf. / 2375 kgf.)

☞ *Use towing bracket A*

☞ *Secure shackle B with the shackle pin and a lock pin*

☞ *Mount a towing bar or cable of adequate size to the towing bore*

☞ *Pull the machine slowly*

Important!

Follow the following instructions under all circumstances:

- Do not tow away the machine if it is at a standstill or broken down, otherwise the machine's travelling drive can be damaged
- The manufacturer's warranty shall not apply to accidents or damage caused by towing the excavator.
- No towing away other machines with towing bracket A.

Crane handling the machine

Safety instructions

- The crane and the lifting gear must have suitable dimensions
- Crane handling the machine requires suitable lifting gear
- Secure the machine against unintentional movement!

Crushing hazard.

☞ *Do not lift the machine with someone in the operator seat/station or on the machine*

☞ *Persons responsible for attaching the lifting devices to the machine shall be experienced with crane operations and hand signals.The crane operator shall maintain sight of the personnel attaching, guiding, and unhooking the excavator.*

☞ *Use OSHA rated and approved lifting devices capable lifting the excavator, attachments, options and accumulated debris. Refer to the general weight guidelines in the specification section of this manual.*

☞ *Do not lift the machine with material in the bucket attachment.*

☞ *The crane operator shall observe the lift zone and lift the machine when the area is clear of people.*

☞ *Do not attempt to lift the excavator with any type of crane including wheel loaders unless the crane operator is qualified to lift loads in craning operations. The crane operator shall be knowledgable of OSHA 1910 craning regulations.*

☞ *The lifting devices must be the specified lengths L1 and L2.*

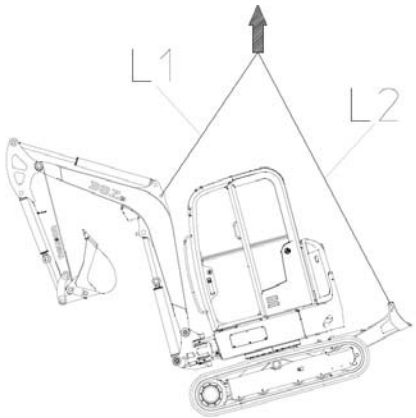


Fig. 44: Crane handling

☞ *Load the machine as follows:*

- Fit the standard bucket and lock it safely
- Empty the standard bucket
- Tilt in the standard bucket and lower it to transport position
- Switch off the engine
- Fold the control lever base up
- Remove the ignition key
- Do not allow anyone to stay in the cab, and close the doors and the engine cover
- Use suitable lifting gear, tracks etc.

☞ Mount the lifting gear at the point on the boom provided for lifting the machine

☞ Mount the lifting gear at the points on the stabiliser blade provided for lifting the machine

☞ Make sure the lifting gear has the required lengths L1 and L2

- Slowly raise the machine

Required lengths L1 and L2 of the lifting gear:

Excavator	Length	Dimension
38Z³	L1	1910 mm (75 inches)
38Z³	L2	3150 mm (124 inches)

Authorised loads	Force
Boom lift eye	40 kN (8992 lbs.)
Stabiliser blade lift eye	40 kN (8992 lbs.)

Loading and transporting the machine

Safety instructions

- The transport vehicle must be of adequate size
  – refer to *Chapter 6 "Specifications"* for the machine's dimensions and weights!
- Remove any mud, snow or ice from the tracks so that the machine can be safely driven onto the ramps
- Secure the machine against unintentional movement
  – see Parking the machine on page 3-21!

Improper loading and transporting can be hazardous.

☞ *Always make sure to load and transport the machine properly.*

☞ *Read the safety instructions at the beginning of this chapter and follow any other applicable safety instructions.*

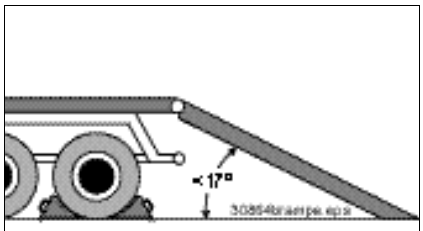


Fig. 45: Access ramps

☞ *Load as follows:*

- Secure the transport vehicle with chocks to prevent it from rolling
- Place the access ramps at the smallest possible angle. Make sure the grade does not exceed 17° (30%). Use access ramps with an antiskid surface only.
- Make sure the loading area is clear and access to it is not obstructed
  – e.g. by superstructures
- Make sure the ramps and the tracks of the excavator are free of oil, grease and ice
- Start the engine of the excavator
- Raise the bucket sufficiently so that it will not touch the ramps
- Carefully drive the excavator onto the middle of the transport vehicle
- Lower the bucket to the loading area
- Switch off the engine
- Fold the control lever base up
- Remove the ignition key
- Do not allow anyone to stay in the cab, and close the doors and the engine cover

Important!

The manufacturer's warranty shall not apply to accidents or damage caused by loading or transporting the excavator.

Strapping down the machine

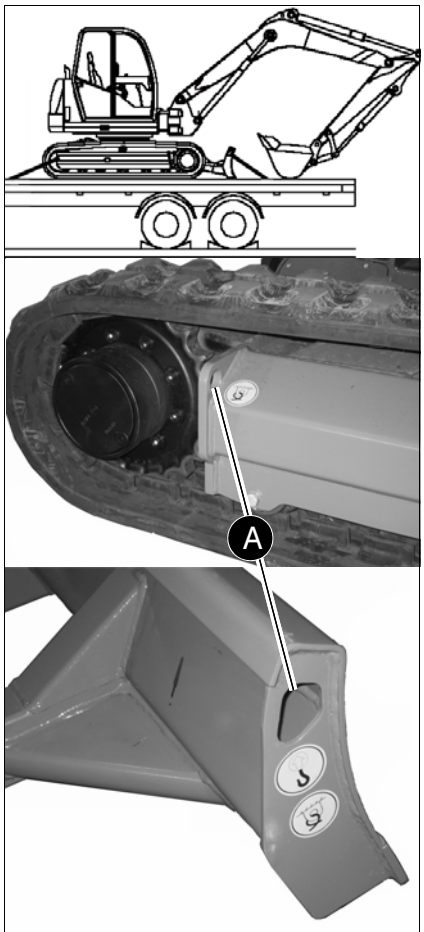


Fig. 46: Strapping down the excavator

Improper loading, strapping, and transporting of the machine can be hazardous.

☞ *Ensure that the machine is properly strapped down.*

☞ *Read the safety instructions at the beginning of this chapter and follow any other applicable safety instructions.*

- Make sure the authorised maximum height is not exceeded
- Secure the tracks of the excavator at the front, rear and at the sides
- Lower the stabiliser blade and the boom
- Firmly strap down the excavator at the eye hooks A onto the platform, with belts or tracks of adequate size
- Before transporting the machine through heavy rain:
  close the outlet of the exhaust silencer with a simple cap or suitable adhesive tape
- Make sure the driver of the transport vehicle knows the overall height, width and weight of his vehicle (incl. excavator) before departure, as well as the legal transport regulations of the country or countries where transport is to take place!

3.4 Working with the machine

General safety instructions

Avoiding cave-in or collapse:

- Never drive up to the edge of a pit from outside – danger of cave-in!
- Never undermine the foundations of walls – danger of collapse!

Preventing tip-overs:

- Do not excavate deeply under the front side of the machine. The ground under the machine could collapse and cause it to tip over.
- Do not carry out demolition work below the machine, otherwise it can lose its balance and tip over.
- In general the machine is more liable to tilt if the attachment is positioned laterally than if it is positioned at the front or rear of the machine.
- The machine can lose its balance and tilt if a demolition hammer or other heavy attachment is used. To carry out work both on level ground and on slopes:
  - ☞ *Never lower, turn or set down the attachment abruptly.*
  - ☞ *Do not extend or retract the main boom ram abruptly, otherwise the machine can tip over.*

Avoiding falling debris:

- Do not dig under projecting ground. Stones or the projecting earth can fall onto the machine.
- Do not place the machine directly underneath the workplace during demolition, otherwise demolished parts can fall onto the machine or the building can collapse, causing severe injury or damage.
- Install a front guard when working in areas with a risk of objects falling from the front (e.g. demolition work).

Increasing operator safety:

- In order to leave the cab more easily under especially difficult circumstances, position the track tracks perpendicularly to the roadside or to the uphill slope with the drive pinion behind the driver.
- When working on roofs or similar structures, check the resistance and the structure itself before starting work. The building can collapse, causing severe injury and damage.
- Do not raise the bucket over the heads of other workers or over the driver seats of trucks or of other means of transport. The material can tilt, or the bucket can knock against the truck and cause severe injury or damage.
- Operation of the machine by unauthorised staff is prohibited!
- The hydraulic system of the machine is still pressurized even when the engine is not running! Release the pressure in the sections of the system and hydraulic lines which are to be opened before starting setup or repair work, e.g. fitting/removing an attachment with hydraulic functions
  – *see* *Lowering the boom with the engine switched off* on page 3-45

Preventing equipment damage:

- Do not use the impact force of the attachment to carry out demolition work. Demolished parts can cause personal injury or damage to property or the equipment.
- Look out for high-voltage cables, underground cables, gas and water pipes during excavation work!

3.5 Control levers/ISO controls: overview

Important!

Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Left-hand side control lever

Potential loss of machine control. The attachment will move in response to movement of the left hand control lever, potentially creating a hazardous condition affecting machine control.

☞ *Do not actuate the left hand control lever while the machine is traveling at maximum speeds on the work site.*

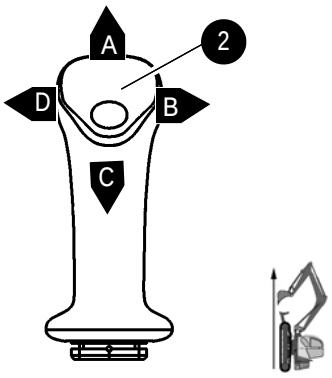


Fig. 4: Left-hand side control lever

Position	Lever	Function
• A	☞ *Forwards*	➥ Stick is extended
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backwards*	➥ Stick is retracted
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always carry out smooth control movements.

Boom swivel controls

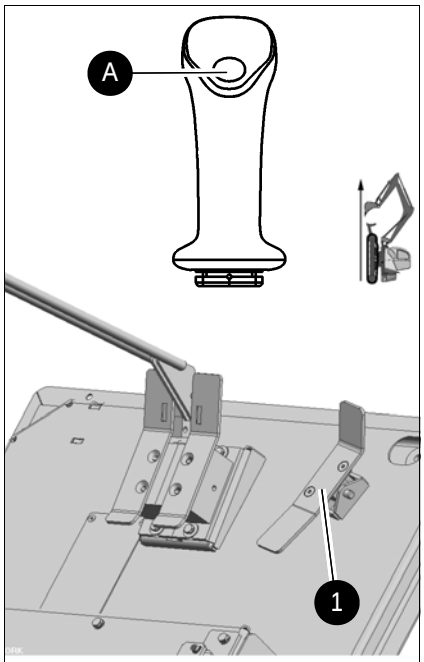


Fig. 5: Swivel controls

Swivel boom to the left:

☞ *Press and hold button A on the control lever*

☞ Move hammer pedal 1 forwards at the same time

Swivel boom to the right:

☞ *Press and hold button A on the control lever*

☞ Move hammer pedal 1 backwards at the same time

Right-hand side control lever

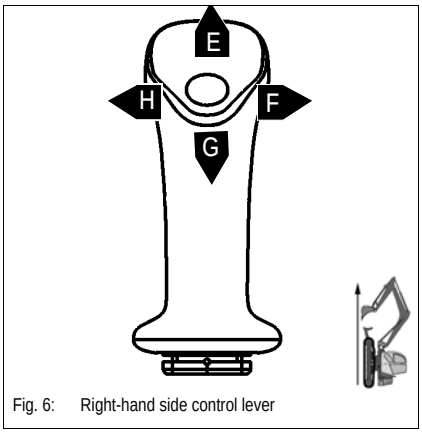


Fig. 6: Right-hand side control lever

Position	Lever	Function
• E	☞ *Forwards*	➥ Boom is lowered
• F	☞ *To the right*	➥ Dumps out the bucket
• G	☞ *Backwards*	➥ Boom is raised
• H	☞ *To the left*	➥ Dumps in the bucket

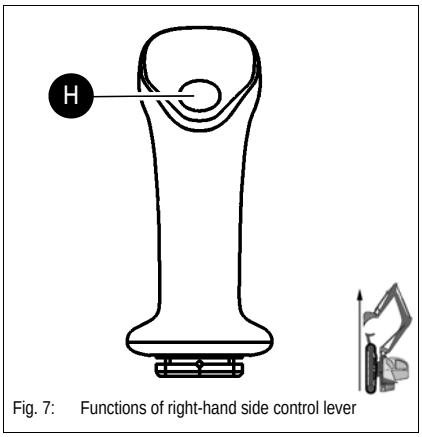


Fig. 7: Functions of right-hand side control lever

Button	Function
☞ *H*	➥ Horn

Lowering the boom with the engine switched off

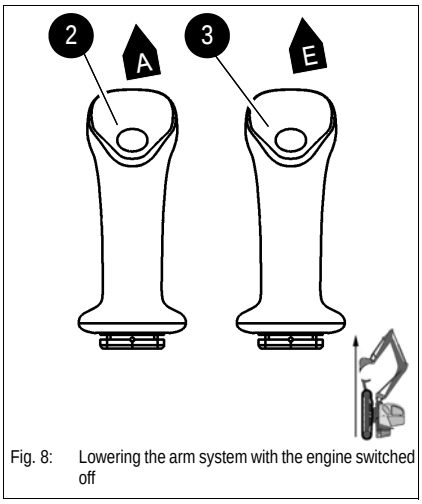


Fig. 8: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no-one is dangerously close to the machine*

☞ *Turn the ignition key to position "1"*

☞ *Press forwards and hold the control lever (*A and E*)*

➥ Until the arm system is completely lowered

☞ *Return the control lever to neutral*

Releasing pressure

Proceed as follows:

☞ *Switch off the engine*

☞ *Move the control lever in all directions a few times*

➥ This releases the pressure in the hydraulic system

Rotating the upper carriage

Rotating the upper carriage is described with standard ISO controls.

Specific safety instructions

- The upper carriage can rotate a little bit further if the machine has not yet reached its operating temperature.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

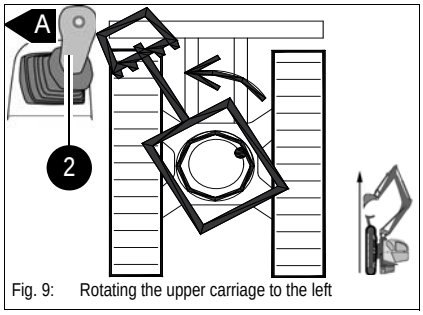


Fig. 9: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* 2 *to the left A*

➥ The upper carriage rotates to the left

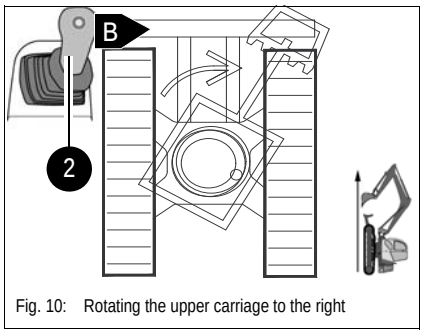


Fig. 10: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* 2 *to the right B*

➥ The upper carriage rotates to the right

Swivel unit brake

Hydraulic swivel unit brake:

The upper carriage's rotation is sufficiently braked by moving control lever 2 back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

Mechanical stop brake:

A multidisc brake integrated in the rotation drive has an additional mechanical brake effect with time delay. This negative-effect brake is used as a stop brake and parking brake for the swivel unit. The upper carriage can be stopped in any position.

Important!

Do not use the brake as a service brake but only as a stop brake and parking brake for the swivel unit.

3.6 Changeover valve for SAE/ISO controls (option)

Possible loss of machine control. Changing the control valve mode selection position will reverse the function control of the hand levers. The left hand control fore and aft motion activates the boom, not the stick. The stick control is on the right hand lever.

☞ *Confirm the selected mode before starting the engine to avoid unintentional movement of the stick or boom.*

☞ *Always secure wing nut J on the directional valve's changeover lever.*

Left-hand side control lever

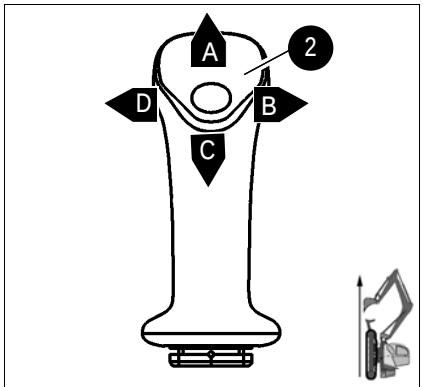


Fig. 11: Left-hand side control lever (SAE controls)

Position	Lever	Function
• A	☞ *Forwards*	➥ Boom is lowered
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backwards*	➥ Boom is raised
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Right-hand side control lever

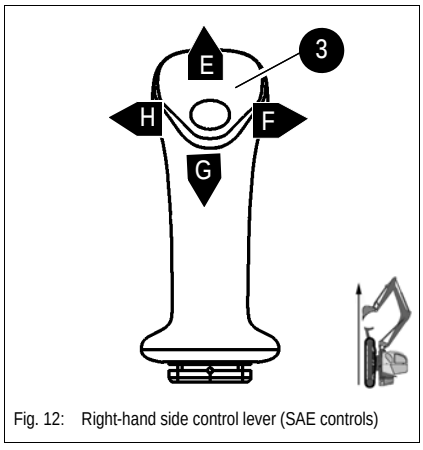


Fig. 12: Right-hand side control lever (SAE controls)

Position	Lever	Function
• E	☞ *Forwards*	➥ Stick is extended
• F	☞ *To the right*	➥ Dumps out the bucket
• G	☞ *Backwards*	➥ Stick is retracted
• H	☞ *To the left*	➥ Dumps in the bucket

Directional valve position

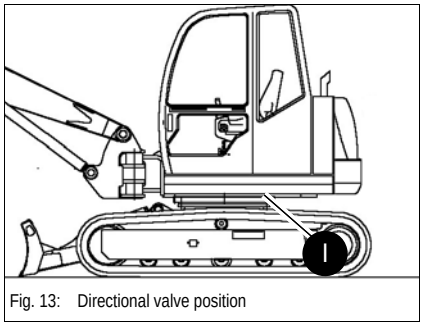


Fig. 13: Directional valve position

The directional valve is located on the left in base plate I of the chassis.

Directional valve

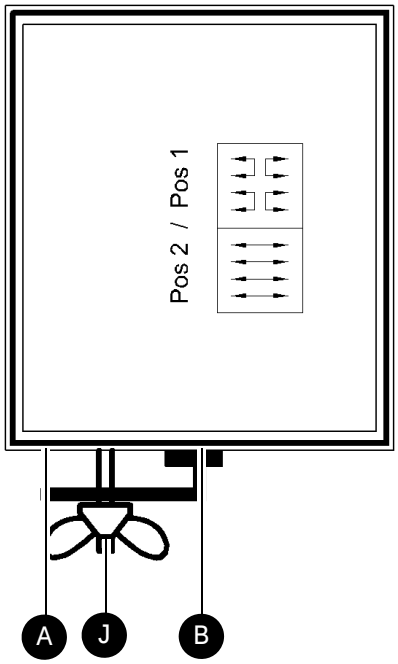


Fig. 14: Directional valve

The changeover valve switches from ISO to SAE controls and vice versa.

Position	Function
• A	➥ ISO controls
• B	➥ SAE controls

☞ *Tighten wing nut J after changing control mode.*

Possible equipment damage or injury hazard. Never drive or work with the machine if wing nut **J** is defective or missing!

☞ *Immediately contact Neuson to replace a defective or missing wing nut.*

3.7 Control lever with proportional controls (option): overview

Important!

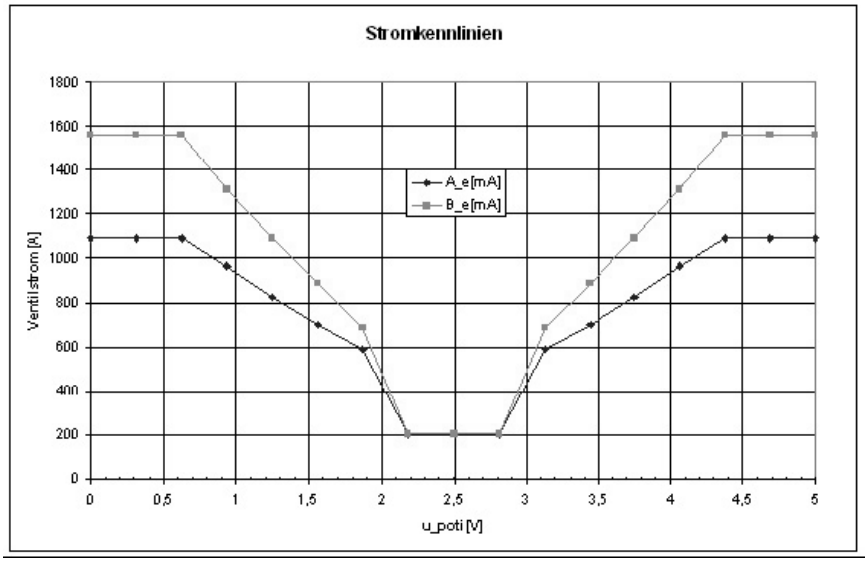
Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Function

This control mode offers proportional operation of the auxiliary hydraulics circuit depending on the position of slide switch B on the joystick.

You can also modify the properties of the characterisitic curve. Precision work, for instance with the offset bucket, does not require the full throughput of the auxiliary hydraulics. Therefore we recommend setting the controls to the low characteristic curve 1 (slow movements).

The slide switch is not pressed fully in this position and you can move the machine more smoothly (flat characteristic curve).



If you require the full throughput then characteristic curve 2 will be the choice to make (slide switch pressed as far as it will go).

Notice

Always use button C on the joystick for hammer operation.

► Do not use characteristic curve 1 for hammer operation since as described above. Oil throughput is not set to maximum in this case and therefore the hydraulic output is not fully available for hammer operation.

☞ *Pressing button C ensures full throughput irrespective of the characteristic curve that has been selected.*

Measures to be taken in case of malfunctions

Notice

Possibility of uncontrolled valve function. The system still works correctly if only one component breaks down. However, if more than one component breaks down, the pressure regulating valves may possibly run uncontrollably.

▶ Shut down the machine and call for service if more than one component breaks down.

Personal injury hazard. In the unlikely event of a system breakdown:

☞ *Disconnect the electric controls from the power supply before carrying out repair work or maintenance on the hydraulic system.*

☞ *Stay clear of areas with danger of crushing.*

☞ *Stay clear of areas between moving hydraulic components and fixed obstacles.*

☞ *The operator of the machine or hydraulic system must be aware of possible machine or system errors.*

Left-hand side control lever

Potential loss of machine control. The attachment will move in response to movement of the left hand control lever, potentially creating a hazardous condition affecting machine control.

☞ *Do not actuate the left hand control lever while the machine is traveling at maximum speeds on the work site.*

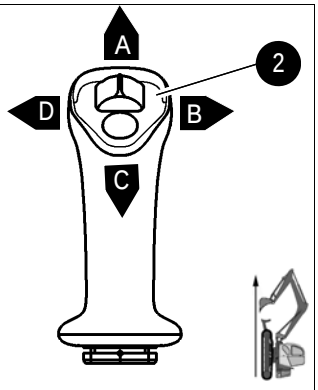


Fig. 15: Left-hand side control lever

Position	Lever	Function
• A	☞ *Forwards*	➥ Stick is extended
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backwards*	➥ Stick is retracted
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always carry out smooth control movements.

Changeover between auxiliary hydraulics and boom swivel

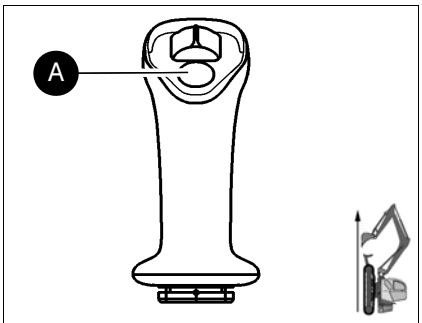


Fig. 16: Changeover between auxiliary hydraulics and boom swivel

Starting the machine automatically switches on the auxiliary hydraulics.

Switching on boom swivel:

☞ *Press button A* on the control lever

Switching on auxiliary hydraulics:

☞ *Press button A* on the control lever

Switching status display on/off for auxiliary hydraulics/boom swivel

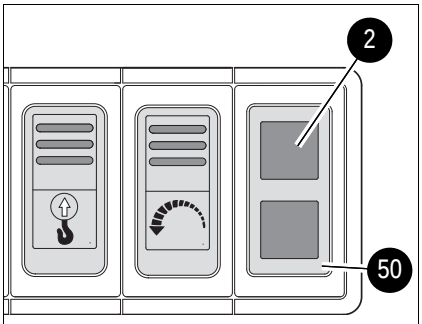


Fig. 17: Characteristic curves – status display

Boom swivel switched on:

☞ *Indicator 2 in status display 50 comes on permanently*

➥ Auxiliary hydraulics is switched off and the boom can be swivelled.

Auxiliary hydraulics switched on:

☞ *Indicator 2 in status display 50 is out*

➥ The boom cannot be swivelled and the auxiliary hydraulics is now operational.

Operating the boom/auxiliary hydraulics

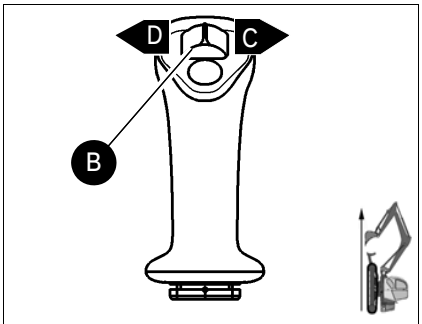


Fig. 18: Boom swivel controls

Movement to the left:

☞ *Move slide switch B on the control lever to the left D*

Movement to the right:

☞ *Move slide switch B* on the control lever to the right *C*

Hammer operation

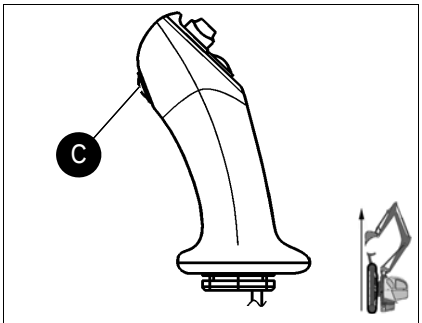


Fig. 19: Hammer operation

Switching on hammer operation:

☞ *Press and hold button C on the control lever*

Switching off hammer operation:

☞ *Release button C on the control lever*

Adjusting control response:

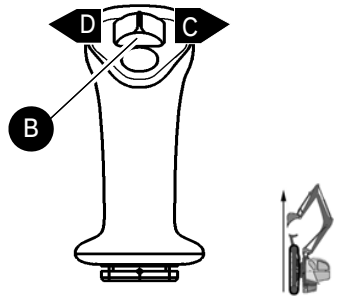


Fig. 20: Adjusting control response

Characteristic curve 1 (slow movements):

☞ *Switch off the ignition*

☞ *Then move slide switch B* to the left *D*

☞ *Hold slide switch B* to the left *D* and switch on ignition at the same time

☞ *Wait 2 seconds and then release slide switch B*

Status display 50 acknowledges by flashing once

Characteristic curve 2 (fast movements – maximum throughput):

☞ *Switch off the ignition*

☞ *Then move slide switch B* to the right *C*

☞ *Hold slide switch B* to the right *C and switch on ignition at the same time*

☞ *Wait 2 seconds and then release slide switch B*

➥ Status display 50 acknowledges by flashing twice

Characteristic curves – status display

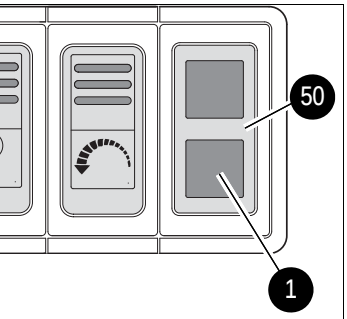


Fig. 21: Characteristic curves – status display

Displays the characteristic curve that has been selected for the control valve.

Characteristic curve 1 (slow movements):

Indicator 1 in status display 50 flashes once after switching on ignition

Characteristic curve 2 (fast movements – maximum throughput):

☞ *Indicator 1 in status display 50 flashes twice after switching on ignition*

Important!

The characteristic curve that has been set last is active after the machine is started again.

Right-hand side control lever

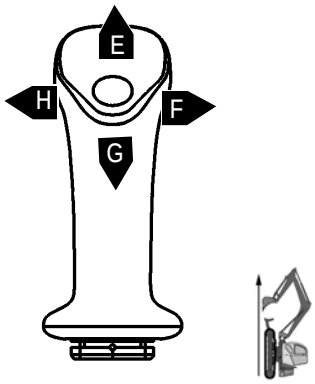


Fig. 22: Right-hand side control lever

Position	Lever	Function
• E	☞ *Forwards*	➥ Boom is lowered
• F	☞ *To the right*	➥ Dumps out the bucket
• G	☞ *Backwards*	➥ Boom is raised
• H	☞ *To the left*	➥ Dumps in the bucket

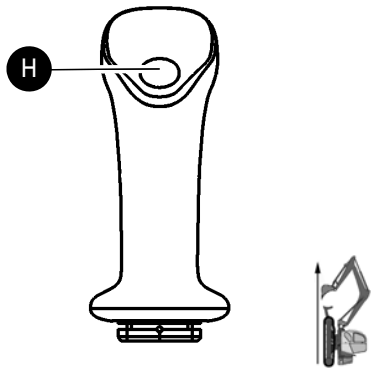


Fig. 23: Functions of right-hand side control lever

Button	Function
☞ *H*	➥ Horn

Lowering the boom with the engine switched off

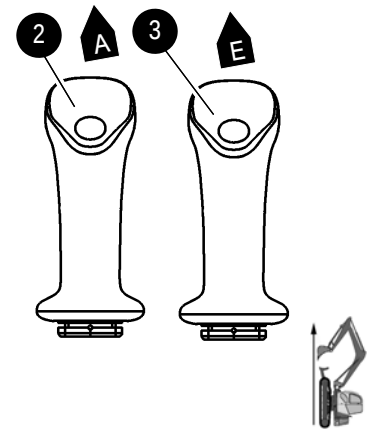


Fig. 24: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no-one is dangerously close to the machine*

☞ *Turn the ignition key to position "1"*

☞ *Press forwards and hold the control lever (*A and E*)*

➥ Until the arm system is completely lowered

☞ *Return the control lever to neutral*

Releasing pressure

Proceed as follows:

☞ *Switch off the engine*

☞ *Move the control lever in all directions a few times*

➥ This releases the pressure in the hydraulic system

Rotating the upper carriage

Rotating the upper carriage is described with standard ISO controls.

Specific safety instructions

- The upper carriage can rotate a little bit further if the machine has not yet reached its operating temperature.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

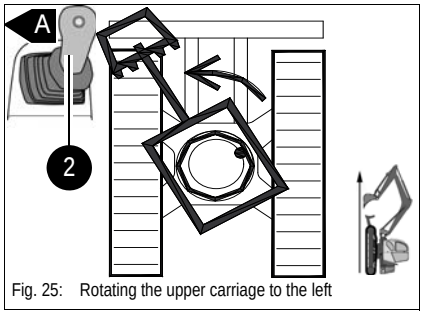


Fig. 25: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* 2 *to the left A*

➥ The upper carriage rotates to the left

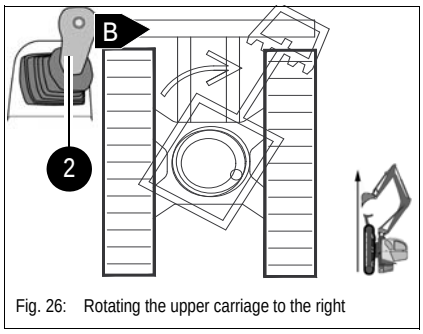


Fig. 26: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* 2 *to the right B*

➥ The upper carriage rotates to the right

Swivel unit brake

Hydraulic swivel unit brake:

The upper carriage's rotation is sufficiently braked by moving control lever 2 back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

Mechanical stop brake:

A multidisc brake integrated in the rotation drive has an additional mechanical brake effect with time delay. This negative-effect brake is used as a stop brake and parking brake for the swivel unit. The upper carriage can be stopped in any position.

Important!

Do not use the brake as a service brake but only as a stop brake and parking brake for the swivel unit.

3.8 Control lever if equipped with 3rd control circuit (option): overview

Important!

Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Left-hand side control lever

Potential loss of machine control. The attachment will move in response to movement of the left hand control lever, potentially creating a hazardous condition affecting machine control.

☞ *Do not actuate the left hand control lever while the machine is traveling at maximum speeds on the work site.*

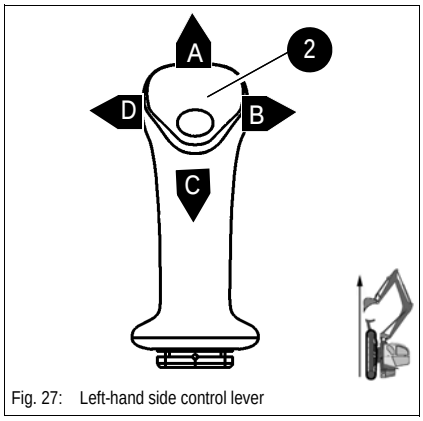


Fig. 27: Left-hand side control lever

Position	Lever	Function
• A	☞ *Forwards*	➥ Stick is extended
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backwards*	➥ Stick is retracted
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always carry out smooth control movements.

Boom swivel controls

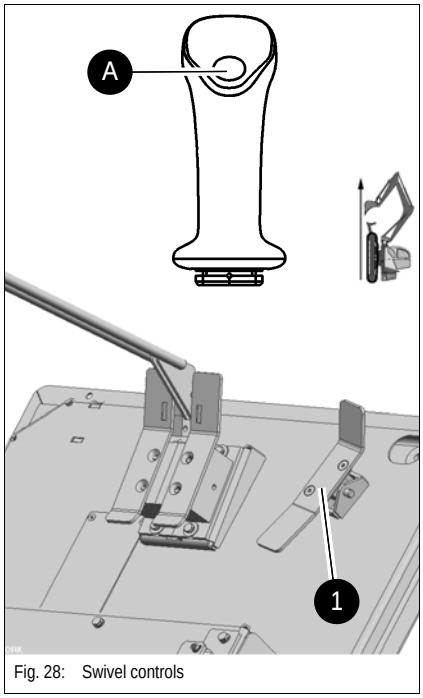


Fig. 28: Swivel controls

Swivel boom to the left:

☞ *Press and hold button A on the control lever*

☞ Move hammer pedal 1 forwards at the same time

Swivel boom to the right:

☞ *Press and hold button A on the control lever*

☞ Move hammer pedal 1 backwards at the same time

Right-hand side control lever

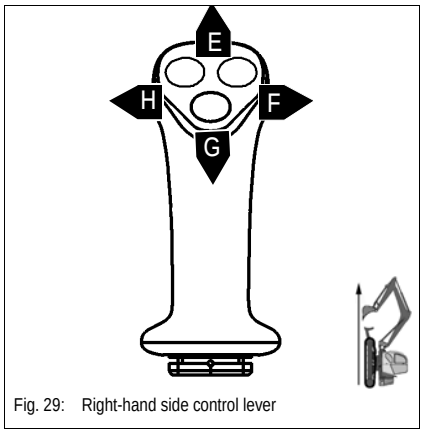


Fig. 29: Right-hand side control lever

Position	Lever	Function
• E	☞ *Forwards*	➥ Boom is lowered
• F	☞ *To the right*	➥ Dumps out the bucket
• G	☞ *Backwards*	➥ Boom is raised
• H	☞ *To the left*	➥ Dumps in the bucket

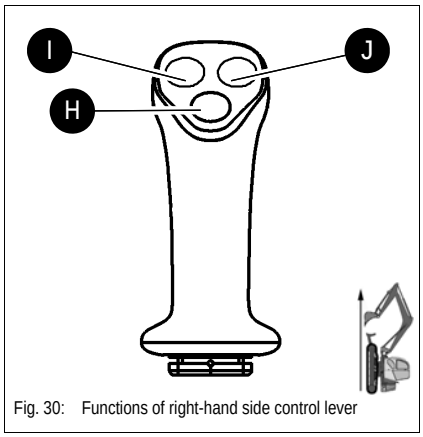


Fig. 30: Functions of right-hand side control lever

Button	Function
☞ *H*	➥ Horn
☞ *I*	➥ Operates the 3rd control circuit
☞ *J*	➥ Operates the 3rd control circuit

Lowering the boom with the engine switched off

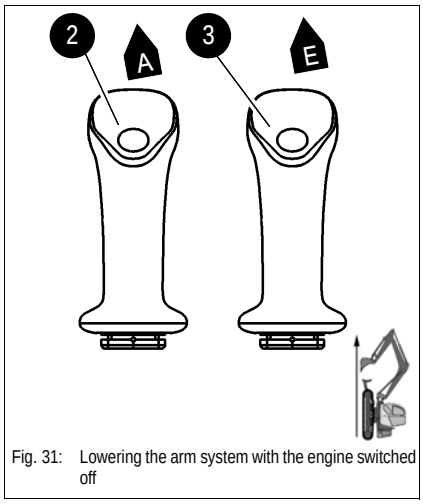


Fig. 31: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no-one is dangerously close to the machine*

☞ *Turn the ignition key to position "1"*

☞ *Press forwards and hold the control lever (*A and E*)*

➥ Until the arm system is completely lowered

☞ *Return the control lever to neutral*

Releasing pressure

Proceed as follows:

☞ *Switch off the engine*

☞ *Move the control lever in all directions a few times*

➥ This releases the pressure in the hydraulic system

Rotating the upper carriage

Rotating the upper carriage is described with standard ISO controls.

Specific safety instructions

- The upper carriage can rotate a little bit further if the machine has not yet reached its operating temperature.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

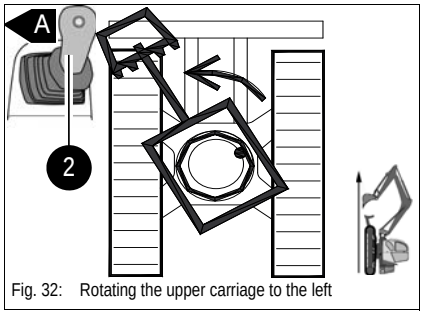


Fig. 32: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* 2 *to the left A*

➥ The upper carriage rotates to the left

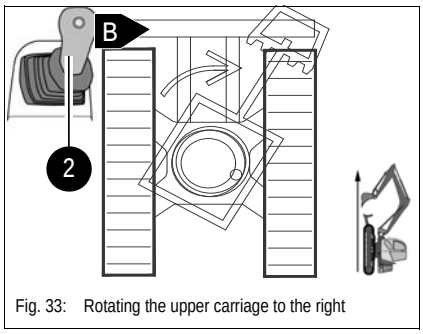


Fig. 33: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* 2 *to the right B*

➥ The upper carriage rotates to the right

Swivel unit brake

Hydraulic swivel unit brake:

The upper carriage's rotation is sufficiently braked by moving control lever 2 back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

Mechanical stop brake:

A multidisc brake integrated in the rotation drive has an additional mechanical brake effect with time delay. This hydraulic parking brake is used as a stop brake and parking brake for the swivel unit. The upper carriage can be stopped in any position.

Important!

Do not use the brake as a service brake but only as a stop brake and parking brake for the swivel unit.

3.9 Re-equipping attachments

Re-equipping the attachments is described below for a bucket. If you are fitting or removing attachments with their own hydraulic functions – e.g. grab or offset bucket – you must follow the special information given in the Operator's Manual of the attachment. Also refer to the Operator's Manual of the attachment for the procedure to follow for fitting an attachment onto a quickhitch.

Specific safety instructions

Personal injury hazard. Using improper tools or installation techniques while re-equipping attachments can cause injury.

☞ *Re-equip attachments only when the engine is stopped.*

☞ *Do not attempt to disconnect/connect attachments on sloping or uneven surfaces. The excavator and the attachment to be disconnected/connected shall be on firm surfaces to avoid sudden unintentional movement.*

☞ *Align the attachment holes in the bucket with a drift to facilitate sliding the pin into the respective holes provided for the connection between attachment and stick.*

☞ *Do not attempt to correct misalignment by using the connecting pin and a hammer. Striking the pin with a hammer can result in a steel chip or splinter being released.*

☞ *Always wear protective goggles, helmets, gloves, and other safety equipment when installing the attachment connecting pins.*

☞ *Do not remove the connecting pins from the bucket attachment unless the bucket has been stabilized to prevent motion when the connecting pins are removed. Do not stand on the closed (back) side of the bucket attachment when disconnecting the bucket.*

☞ *Do not attempt to disconnect the bucket attachment until it rests firmly on the ground or a stable surface. Removing the connecting pins of the bucket attachment with the attachment raised is an unsafe practice that will create a hazardous condition from the falling bucket.*

☞ *Do not align the connecting holes with fingers. Do not place fingers and hands over the connecting brackets to align the connecting hole to avoid potential shearing, pinching or crushing injuries.*

☞ *After the attachment is connected to the excavator stick and before resuming operation, make sure the attachment is safely locked with the stick and the tilt rod, or with the quick hitch option.*

Removing a bucket

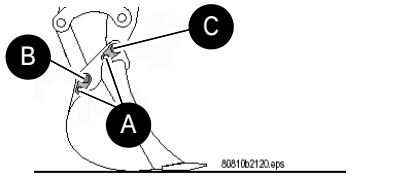


Fig. 34: Removing a bucket

☞ *Re-equip as follows:*

- Lower the bucket to the ground with its flat side facing down
- Switch off the engine
- Remove linch pin A
- First remove pin B, and then pin C. Carefully expel pins that are stuck with a hammer and a brass punch

If pin C is stuck:

- Start the engine
- Slighty raise and lower the boom to take the load off the pin
- Switch off the engine

Important!

Place the bucket only with minimum pressure on the ground as you remove the pins. The higher the pressure on the ground, the higher the resistance and the more difficult it is to remove the pins.

Mounting a bucket

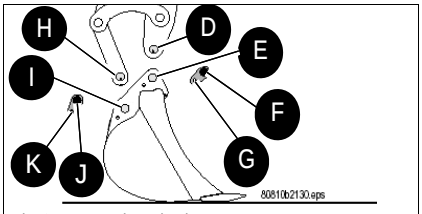


Fig. 35: Mounting a bucket

☞ *Proceed as follows:*

- Lower the bucket to the ground with its flat side facing down
- Grease the joints and the pins before inserting them
- Start the engine
- Straighten the stick so that bores D and E are flush
- Insert greased pin F
- Tighten lock screw G
- Actuate the stick ram until bores H and I are flush
- Insert the greased pin J
- Lock linch pin K

Quickhitch (option)

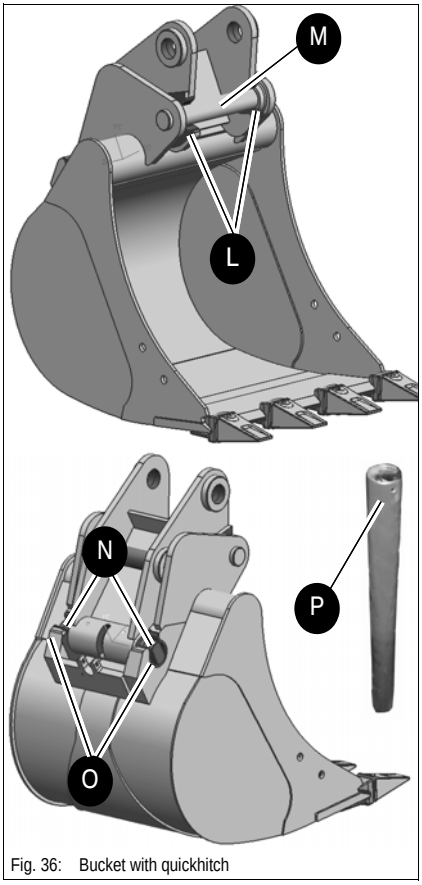


Fig. 36: Bucket with quickhitch

Possibility of crushing / striking injury from attachments. An unlocked quick hitch attachment can move unexpectedly and strike nearby people or objects.

☞ *Before using the excavator, make sure the attachment is securely locked onto the quick hitch.*

☞ *The lock must be visible on either side of the mounting bore of the attachment to confirm the hitch is locked.*

☞ *Re-equip as follows:*

- Approach the machine to the attachment
- Hitch coupling bar M onto coupling claws L of the quickhitch to pick up the bucket
- Engage lock mechanism N in mounting bores O
- Place the bucket on level ground

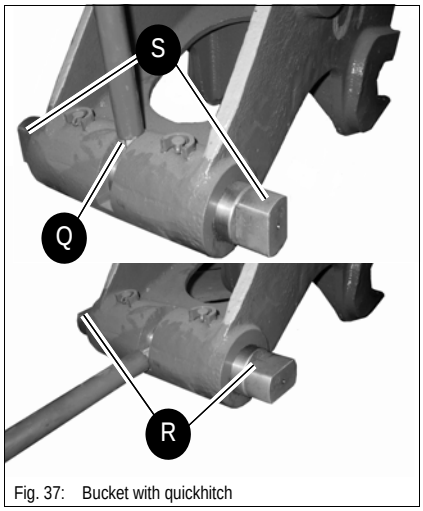


Fig. 37: Bucket with quickhitch

☞ *Lock as follows:*

- Switch off the engine
- Insert tube P (included in scope of delivery) in clamping sleeve Q
- Press the tube downwards
- The lock pins must be in position R

☞ *Unlock as follows:*

- Switch off the engine
- Insert tube P (included in scope of delivery) in clamping sleeve Q
- Press the tube upwards
- The lock pins must be in position S

Connections for auxiliary hydraulics

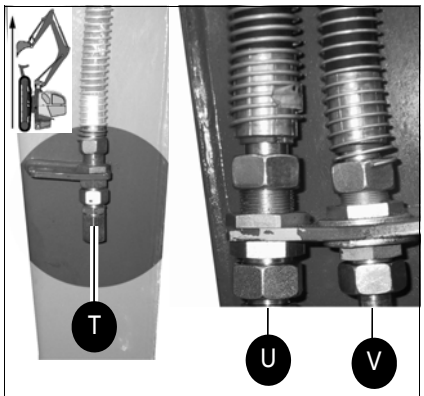


Fig. 38: Connections for auxiliary hydraulics

Port	Stick (left)	Stick (right)
T	☞ *Pressure line*	
U		☞ *Large reflux line*
V		☞ *Pressure line*

Important!

Follow the instructions in the Operator's Manual of the attachment manufacturer for connecting the auxiliary hydraulics to attachments.

Grab couplings

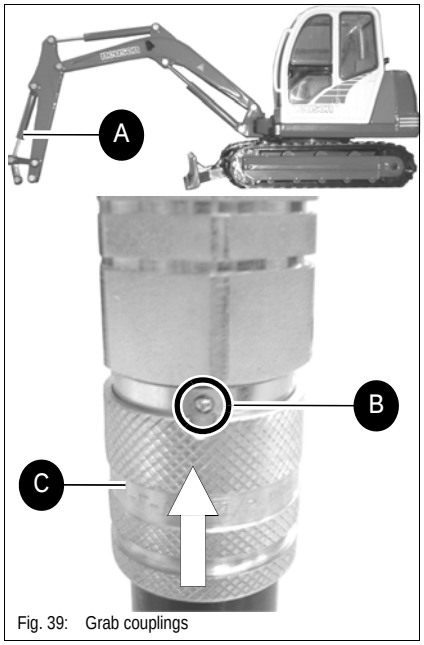


Fig. 39: Grab couplings

Connect and disconnect the grab couplings as follows:

Removing the coupling:

☞ *Park the machine on firm and level ground*

☞ *Extend stick ram A halfway through*

☞ *Switch off the engine*

☞ *Release the pressure on stick ram A by moving the right-hand side control lever to the left and right*

☞ *Fold the control lever base up*

☞ *Turn lock sleeve C towards lock ball B*

☞ *Pull lock sleeve C upwards*

☞ The coupling opens

Connecting the coupling:

☞ *Connect the coupling onto the stick ram connection making sure it is straight*

☞ Wait until you hear a hissing sound of the connection

☞ Fully connect the coupling on the connection

☞ *Turn back the lock again (away from lock ball B)*

Attachments

Important!

Please refer to the Operator's and maintenance manual of the attachment manufacturer for using and carrying out maintenance on attachments such as hammers, grabs etc.

“Hose burst valve” safety feature (option)

Important!

The “Hose burst valve” safety feature avoids the boom from being lowered or dumped out without being braked, in the event of a bursting hose or pipe.

Personal injury hazard. Burst hoses, pipes, and hydraulic fluid can cause injuries.

☞ *The hose burst valve safety feature is activated as soon as a hose or pipe bursts.*

☞ *Have damage to the hydraulic system and to the hose burst valve itself immediately repaired and checked by technical staff with suitable training.*

☞ *In the event of damage, proceed as follows:*

- Immediately stop the machine
- Move the boom to transport position
- Fold up the left-hand side control lever base
- Switch off the engine
- Remove the ignition key and lock the cab
- Lock the machine and the attachment

Environment!

Collect the drained hydraulic oil in a suitable container.

☞ Dispose of drained hydraulic oil by an ecologically safe method

☞ Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

Working with the standard bucket

The following section describes work operations with the machine equipped with the standard bucket.

The standard bucket is mainly used for digging earth, and for loosening, picking up, digging and loading loose or solid material.

Inadmissible work

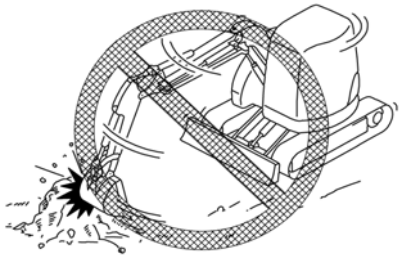


Fig. 40: Working with the swivel force

Working with the swivel force

☞ *Do not use the swivel force of the upper carriage to compact the ground or tear down piles or walls.*

☞ *Do not allow the bucket teeth to penetrate into the ground as you rotate the upper carriage.*

➥ Working this way damages the attachments.

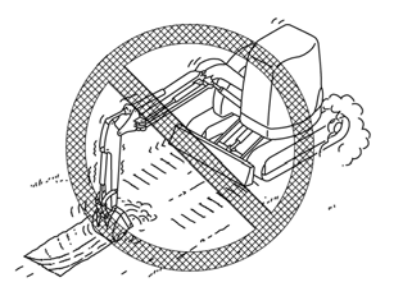


Fig. 41: Working with the drive force

Working with the drive force

☞ *Do not allow the bucket to penetrate into the ground and do not excavate by using the drive force of the machine.*

➥ Working this way can damage the machine or the attachments.

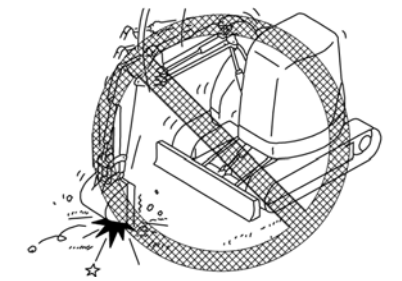


Fig. 42: Working with the falling force by lowering the bucket

Working with the falling force by lowering the bucket

☞ *Do not use the machine's falling force for excavating, and do not use the bucket's falling force as a hoe, hammer or pile-driver.*

➥ Working this way can greatly reduce the machine's service life.

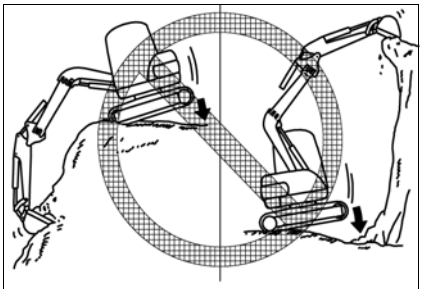


Fig. 43: Working with the machine's falling force

Working with the falling force by lowering the machine

☞ *Do not use the machine's falling force for excavating.*

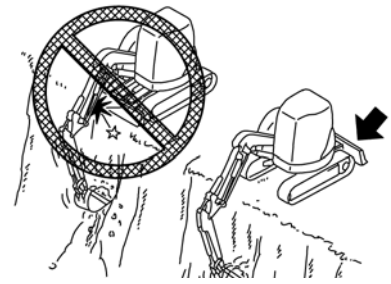


Fig. 44: No thrusting the stabilizer blade

No thrusting the stabilizer blade

☞ *Do not thrust the stabilizer blade against rocks or blocks to avoid damage to the rams and the blade itself.*

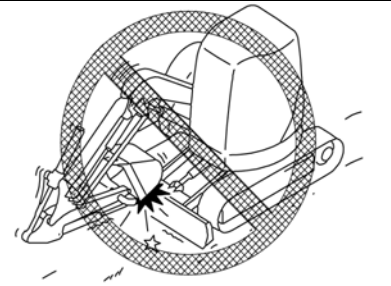


Fig. 45: Retracting attachments

Retracting attachments

☞ *Make sure the bucket does not hit the stabilizer blade as you retract attachments for driving or transport.*

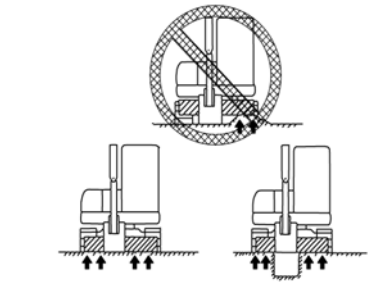


Fig. 46: stabilizer blade fully lowered

stabilizer blade fully lowered

☞ *Fully lower the stabilizer blade when using it on the side opposite the excavation side.*

Excavator work position

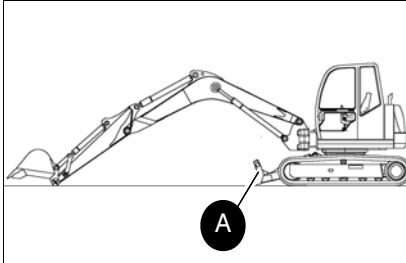


Fig. 47: Excavator work position

Proceed as follows:

☞ *Place stabilizer blade A on the side you want to dig*

Bucket position when digging

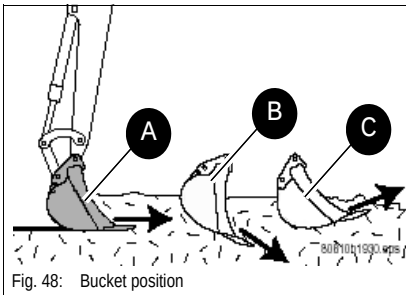


Fig. 48: Bucket position

☞ *Move the bucket as shown in A*

➥ Move the flat side of the bucket parallel to the ground

Important!

Position B causes the bucket to penetrate into the ground. Work slows down, and the engine and the hydraulic pump are subject to overload if this position is used over a longer period of time!
Position C causes the bucket to be forced upwards and not to be filled completely. This slows down work, too.

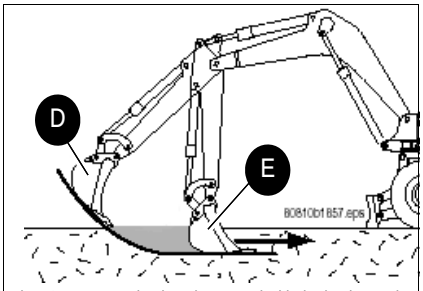


Fig. 49: Penetrating into the ground with the bucket and aligning it

☞ *Dig as follows:*

- Penetrate into the ground with the bucket D
- Lower the stick and at the same time align bucket E until
- Reaching the required digging depth and
- The flat side of the bucket is parallel to the ground (see bucket position(Fig. 45.)

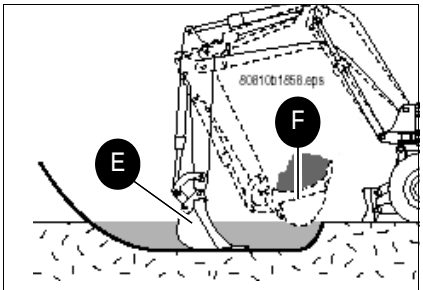


Fig. 50: Filling the bucket

☞ *Pull bucket* E *parallel to the ground towards the excavator. At the same time, if possible:*

- Move the stick towards the excavator
- Lower the boom

☞ *With a sufficiently full bucket* E*:*

- Keep on moving the stick towards the excavator and at the same time
- Tilt in stick F

Excavating trenches

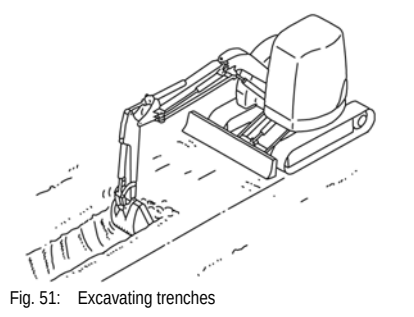


Fig. 51: Excavating trenches

- Excavating trenches is more efficient

  ☞ by using a suitable bucket for this work and positioning the track tracks parallel to the limit line of the trench.

  ☞ In case of large trenches, first excavate the side sections and then the centre section.

Loading

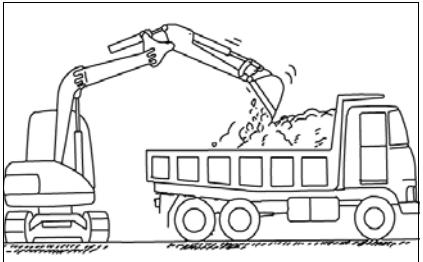


Fig. 52: Loading

- Loading in confined areas with a limited angle of rotation is more efficient

  ☞ by positioning the truck so as to ensure maximum visibility for the driver of the excavator.

- Loading material on trucks is easier and faster

  ☞ if the hydraulic excavator is placed at the rear end of the truck and not at the sides.

Grading

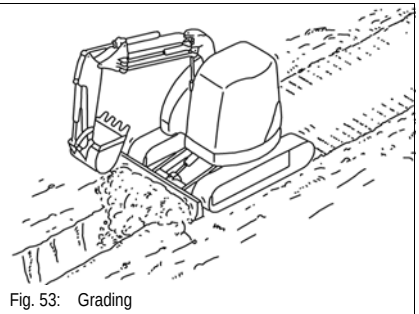


Fig. 53: Grading

- Use the stabilizer blade to fill in trenches and to grade surfaces.

Important!

Work on level ground. Grade with the stabilizer blade first in case of sloping ground

Excavating trenches sideways

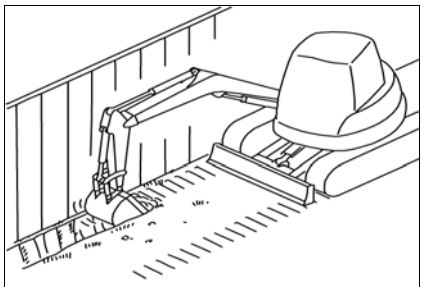


Fig. 54: Excavating trenches sideways

- The machine can be used for excavating trenches sideways in confined areas

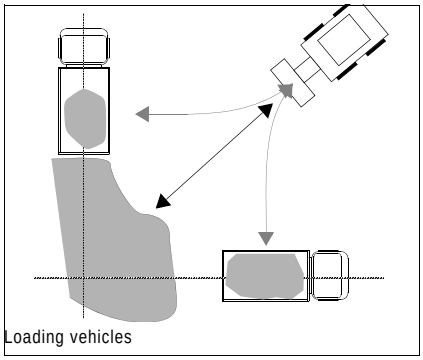
  ☞ by rotating the upper carriage and swivelling the main boom (combined position and movement of both).

Further practical hints for digging

When planning and carrying out digging work, we recommend that you observe the following points:

- Exits from pits must be outside the digging line and as level as possible
- Dig by removing adjacent strips if possible
- Make sure you can drive forwards when driving out of the digging area with a fully loaded bucket
- Whenever possible, drive in reverse when transporting a full bucket down a steep slope

Loading vehicles



Loading vehicles

When loading vehicles, we recommend taking the following into account:

- If possible, the truck and the working direction of the bucket should form an angle of 45°
- Only raise the full bucket to dump height when you are driving in a straight line towards the truck
- If possible dump with the wind behind you to keep the dust away from your eyes, air filters and fans!

Freeing the machine

If your machine gets stuck in the ground:

☞ *Dump out the bucket until the blade is vertical above the ground*

☞ *Lower the arm system all the way*

☞ *Slowly dump out the bucket*

➥ The machine is pushed backwards

☞ *Reverse slowly*

☞ *Repeat this procedure until the tracks reach firm ground*

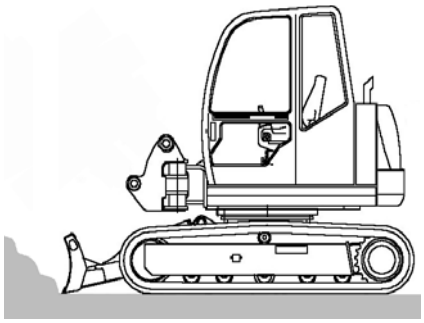
☞ *Reverse the machine away*

3.10 Grading

Possibility of crushing/striking injury from a moving stabilizer blade.

☞ *Make sure no one is in the area of danger when working with the stabilizer blade.*

Grading



☞ *Lower the stabilizer blade to the ground*
– see chapter Stabiliser blade operation on page 3-20

☞ *Set the depth of the layer you want to remove with the stabilizer blade lever*

➥ No raising the machine by lowering the stabilizer blade

➥ The clearance between the stabilizer blade and the ground should be about 1 cm

Working alongside trenches

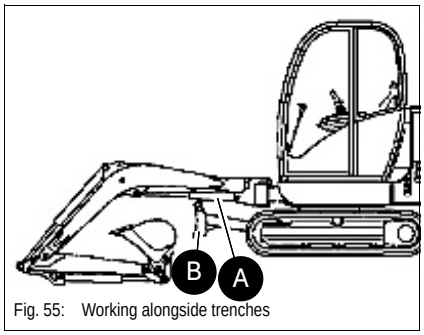


Fig. 55: Working alongside trenches

Notice

Possible piston rod damage. Danger of damaging piston rod A of the boom ram when working alongside trenches, slopes etc. and operating the stabilizer blade and the boom incorrectly.

- ▶ Always use stabilizer blade B for stabilisation during excavation work.
- ▶ Make sure stabilizer blade B never touches piston rod A (*Fig. 55*).
- ▶ If you carry out deep excavations with stabilizer blade B at the front, make sure piston rod A does not touch or rest on stabilizer blade B (*Fig. 56*).

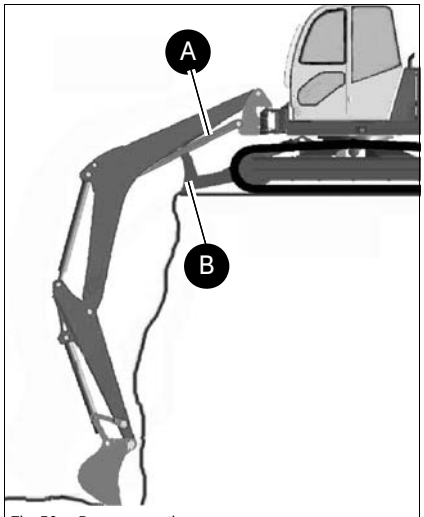


Fig. 56: Deep excavation

Stabilizer blade at rear

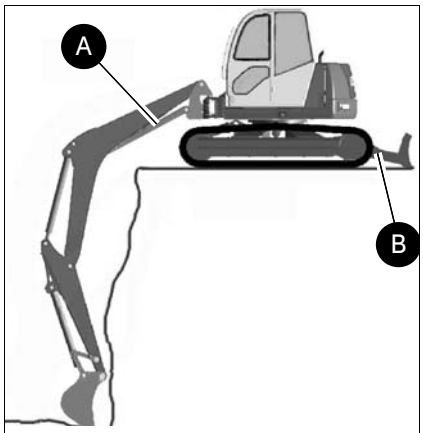


Fig. 57: Deep excavation

☞ *Personal injury hazard. Improperly operating the machine with the stabilizer blade B at the rear when working alongside trenches, slopes, etc. can cause the machine to tip or fall.*

☞ *Use this work position (Fig. 57) only in an extreme emergency since the machine can tilt forwards into the trench.*

☞ *We recommend using the first work position (Fig. 56) described above.*

☞ *Make sure piston rod A does not touch stabilizer blade B under any circumstances.*

3.11 Safe load indicator (option)

Possibility of personal injury or equipment damage from an inaccurate or non-functioning safe load indicator.

☞ *Always switch on the safe load indicator!*

☞ *Contact your* Wacker *Neuson dealer if the safe load indicator is not adjusted correctly.*

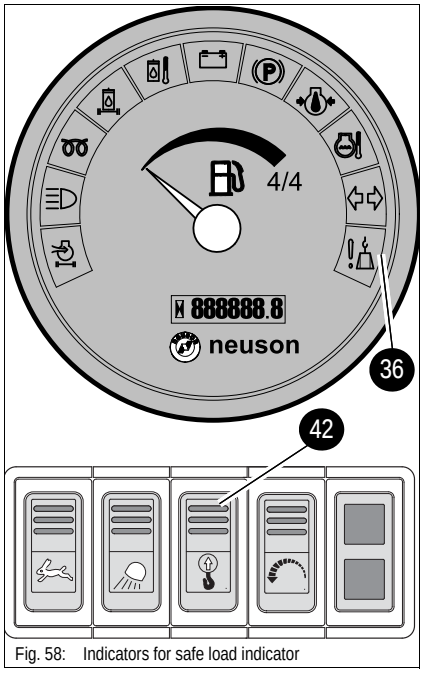


Fig. 58: Indicators for safe load indicator

Switch on the safe load indicator as follows:

☞ *Press switch* 42 *on the instrument panel*

➥ Indicator 36 on the round indicating instrument comes on in case of overload

The safe load indicator's indicator comes on, and an acoustic warning is given, to warn the driver he has reached the maximum admissible load. Any further increase of the load moment can cause the machine to overturn in this situation. Therefore the driver must immediately reduce the load moment as follows:

☞ *Reduce reach until both the acoustic signal and the indicator in the round display element go out*

5 Maintenance

5.1 Introduction

Operational readiness and the service life of machines are heavily dependent on maintenance.

It is therefore in the interest of the machine owner to carry out the prescribed maintenance work.

Before carrying out service and maintenance work, always read, understand and follow the instructions given in:

- Chapter 2 “SAFETY INSTRUCTIONS” of this Operator's Manual
- The Operator's Manuals of the attachments.

Carry out the prescribed inspections and rectify any disorders before putting the machine into operation.

Secure open (engine) covers appropriately. Do not open (engine) covers on slopes or in strong wind.

Dirt can be blown away and cause severe injuries when using compressed air. Always wear protective goggles, masks and clothing.

Daily service and maintenance work, and maintenance according to maintenance plan “A” must be carried out by a specifically trained driver. All other maintenance work must be carried out by trained and qualified staff only.

The maintenance plans indicate when the maintenance work mentioned below must be carried out – *see Maintenance plan (overview)* on page 5-35.

5.2 Fuel system

Specific safety instructions

Fire and fume inhalation hazards.

☞ *Do not refuel in closed rooms.*

☞ *Never perform maintenance or repair work on the fuel system in the vicinity of open flames or sparks.*

☞ *Never smoke when working on the fuel system or when refueling.*

☞ *Before refueling, stop the engine and remove the starting key.*

☞ *Wipe up any fuel spills immediately.*

☞ *Remove spilled fuel from the machine components and surfaces before use to reduce the risk of fire.*

Refuelling

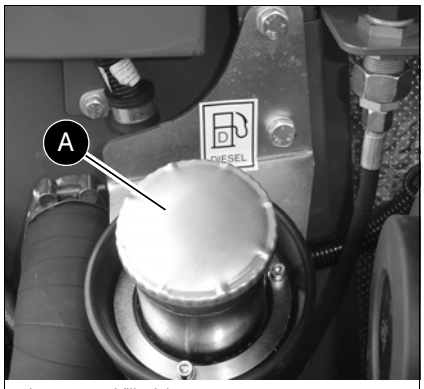


Fig. 1: Fuel filler inlet

Filler inlet A for the fuel tank is located behind the cab, on the right in driving direction.

Environment!

Use a suitable container to collect the fuel as it drains and dispose of it in an environmentally friendly manner!

Important!

Do not run the fuel tank completely dry. Otherwise, air is drawn into the fuel system. This requires bleeding the fuel system – *see Bleeding the fuel system* on page 5-4.

Important!

Fill up the tank with the correct fuel type at the end of each working day. This prevents condensation water from forming in the fuel tank over night. Do not fill the tank completely but leave some space for the fuel to expand.

Stationary fuel pumps

General

Only refuel from stationary fuel pumps. Fuel from barrels or cans is usually contaminated.

Even the smallest particles of dirt can cause

- Increased engine wear
- Malfunctions in the fuel system and
- Reduced effectiveness of the fuel filters

Refuelling from barrels

If refuelling from barrels cannot be avoided, note the following points (see fig. 2):

- Barrels must neither be rolled nor tilted before refuelling
- Protect the suction pipe opening of the barrel pump with a fine-mesh strainer
- Immerse it down to a max. 15 cm above the floor of the barrel
- Only fill the tank using refuelling aids (funnels or filler pipes) with integral microfilter
- Keep all refuelling containers clean at all times

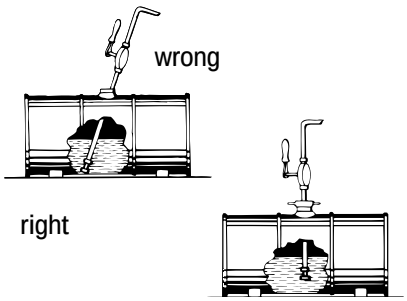


Fig. 2: Refuelling from a barrel

Diesel fuel specification

Use only high-grade fuels

Grade	Use
• 2-D ASTM D975 – 94	USA
• 1-D ASTM D975 – 94	
• EN 590 : 96	EU
• ISO 8217 DMX	International
• BS 2869 – A1	England
• BS 2869 – A2	

Bleeding the fuel system

Fire and burn hazard. Draining fuel may ignite if it comes into contact with hot engine parts or the exhaust system. Hot fuel may cause burns.

☞ *Always wear protective equipment and safety glasses when working with fuel.*

☞ *Never bleed the fuel system if the engine is hot.*

Bleed the fuel system in the following cases:

- After removing and fitting the fuel filter, prefilter or the fuel lines back on again
- After running the fuel tank empty
- After running the engine again, after it has been out of service for a longer period of time

☞ *Bleed the fuel system as follows:*

- Fill the fuel tank
- Turn the ignition key to the first position
- Wait about 5 minutes while the fuel system bleeds itself automatically
- Start the engine

If the engine runs smoothly for a while, and then stops; or if it does not run smoothly:

- Switch off the engine
- Bleed the fuel system again as described above
- Have this checked by authorised staff if necessary

Fuel prefilter with water separator

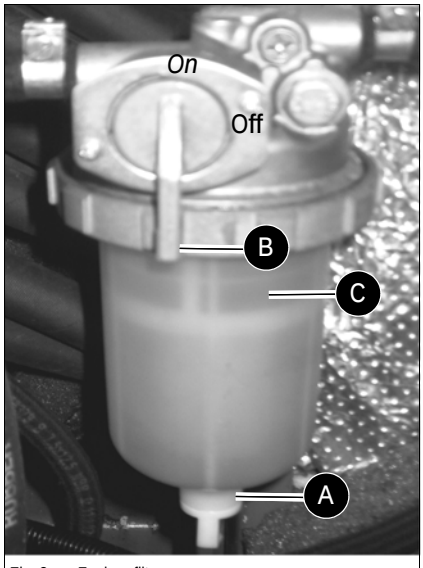


Fig. 3: Fuel prefilter

Check the fuel prefilter as follows:

☞ *If the red indicator ring rises to position C*

☞ *Unscrew thread A*

➥ The water drains

➥ Wait until the indicator ring returns to the bottom of the water separator

☞ *Screw thread A back on again*

Interrupt fuel supply as follows:

☞ *Turn ball-type cock B to the OFF mark*

➥ Fuel supply is interrupted

☞ *Turn ball-type cock B to the ON mark*

➥ Fuel supply is open again

Environment!

Thread A is fitted with a hose. Collect the water as it drains with a suitable container and dispose of it in an environmentally friendly manner.

5.3 Engine lubrication system

Notice

Possibility of equipment damage. If the engine oil level is too low or if an oil change is overdue, this can cause engine damage or loss of power.

► Have the oil changed by an authorized service facility.

► Refer to chapter 5.15 “Maintenance Plan (Overview).

Checking the oil level

Important!

Check the oil level once a day.
We recommend checking it before starting the engine. After switching off a warm engine, wait at least 5 minutes before checking.

Checking the oil level

☞ *Proceed as follows:*

- Park the machine on level ground
- Switch off the engine!
- Fold the control lever base up
- Let the engine cool down
- Open the engine cover
- Clean the area around the oil dipstick with a lint-free cloth
- Oil dipstick A:

☞ Pull it out

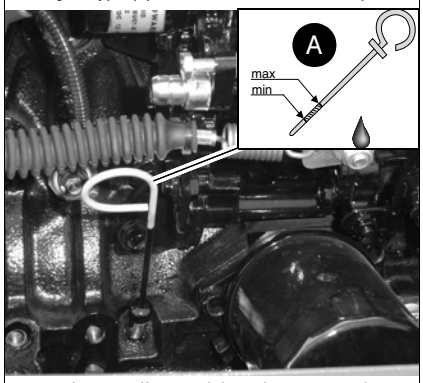
☞ Wipe it with a lint-free cloth

☞ Push it back in as far as possible

☞ Withdraw it and read off the oil level

☞ *However if necessary, fill up oil at the latest when the oil reaches the MIN mark on the oil dipstick* A

Old engine type (up to serial number AG00572):



New engine type (from serial number AG00573):

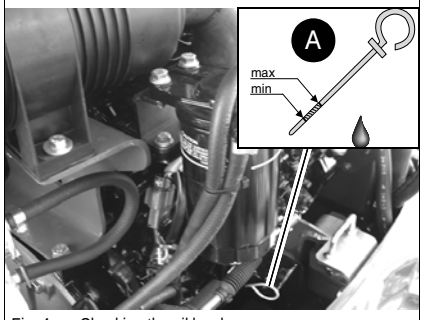


Fig. 4: Checking the oil level

Filling up engine oil

Notice

Possibility of engine damage from too much oil or incorrect engine oil.

- ▶ Do not add engine oil above the MAX mark of oil dipstick 5/A.
- ▶ Use only the specified engine oil.

Environment!

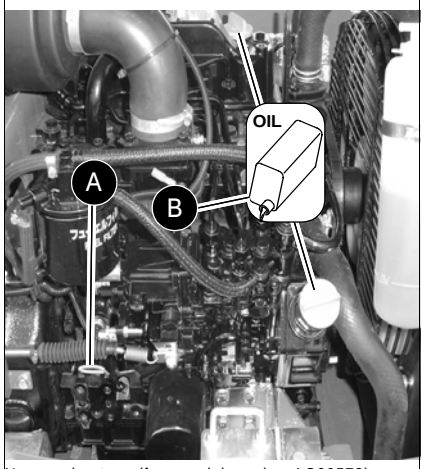
Use a suitable container to collect the engine oil as it drains and dispose of it in an environmentally friendly manner!

Filling up engine oil

☞ *Proceed as follows:*

- Clean the area around oil filler cap B with a lint-free cloth
- Open filler cap B
- Raise oil dipstick A slightly to allow any trapped air to escape
- Fill in engine oil
- Wait about 3 minutes until all the oil has run into the oil sump
- Check the oil level – *see Checking the oil level* on page 5-5
- Fill up if necessary and check the oil level again
- Close filler cap B
- Push oil dipstick A back in as far as possible
- Completely remove all oil spills from the engine

Old engine type (up to serial number AG00572):



New engine type (from serial number AG00573):

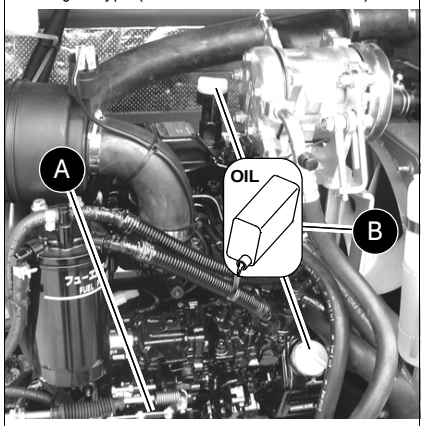


Fig. 5: Oil dipstick and oil filler cap

5.4 Engine and hydraulics cooling system

The oil/water cooler is located in the engine compartment, on the right side of the engine. It cools the diesel engine, and the hydraulic oil of the drive and work hydraulics.

The expansion tank for the coolant is also located in the engine compartment, in front of and above the oil cooler.

Specific safety instructions

Notice

Improperly maintaining the cooling system can cause engine damage.

- *Dirt on the radiator fins reduces the cooler's heat dissipation capacity.*
  - ▶ Clean the outside of the radiator at regular intervals. Use oil-free compressed air (2 bar max.) to clean. Maintain a certain distance to the radiator to avoid damage to the radiator fins. Refer to the maintenance plans in the appendix for the cleaning intervals.
  - ▶ In dusty or dirty work conditions, clean more frequently than indicated in the maintenance plans.
- *An insufficient coolant level reduces the heat dissipation capacity as well and can lead to engine damage:*
  - ▶ Check the coolant level at regular intervals. Refer to the maintenance plans in the appendix for the intervals.
  - ▶ If coolant must be added frequently, check the cooling system for leaks and/or contact your dealer.
  - ▶ Never fill in cold water/coolant if the engine is warm.
  - ▶ After filling the expansion tank, make a test run with the engine and check the coolant level again after switching off the engine.
- *The use of the wrong coolant can destroy the engine and the cooler.*
  - ▶ Add enough antifreeze compound to the coolant – but never more than 50 %. If possible use brand-name antifreeze compounds with anticorrosion additives.
  - ▶ Observe the coolant compound table – *see chapter 6.10 Coolant compound table* on page 6-5.
  - ▶ Do not use cooler cleaning compounds if an antifreeze compound has been added to the coolant – otherwise this causes sludge to form, which can damage the engine.
- *Follow the procedure below after filling the expansion tank:*
  - ▶ Test run the engine.
  - ▶ Switch off the engine.
  - ▶ Let the engine cool down.
  - ▶ Check the coolant level again.

Environment!

Use a suitable container to collect the coolant as it drains and dispose of it in an environmentally friendly manner!

Checking/filling up coolant

Burn hazard. The coolant in the system is hot under normal operating conditions and under about 1 bar (15 psi) pressure.

☞ *Never open the coolant tank or drain coolant if the engine is hot.*

☞ *Wait at least 15 minutes after stopping the engine.*

☞ *Wear protective glasses, gloves and clothing.*

☞ *Open filler cap B figure 102 to the first notch and allow the pressure to escape.*

☞ *Do not proceed with checking, maintaining or repairing the cooling system unless the components are comfortable to touch (less than 49°C (120°F)).*

Hazardous material. Coolant mixtures are poisonous and flammable. Contact with skin and eyes should be avoided.

☞ *Wash skin immediately to remove coolant mixture from the skin to avoid irritation.*

☞ *Wash eyes immediately if coolant comes in contact with the eye. Seek medical attention immediately.*

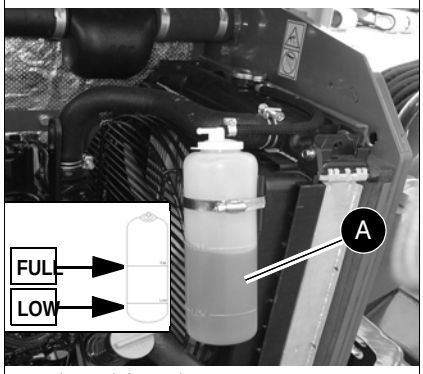
☞ *Store coolant concentrate and mixtures in a secure space to prevent unauthorized contact.*

☞ *Do not store or use coolant or coolant mixtures near open flames including smoking materials.*

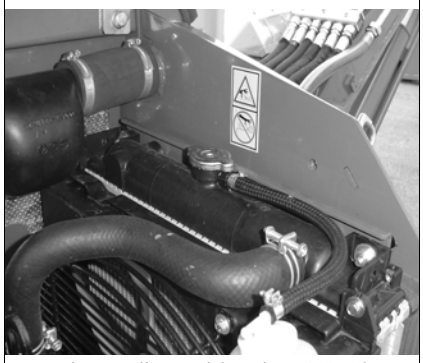
☞ *Dispose of used coolant through approved methods for recycling. Do not dispose of coolant or mixtures in sewers, toilets or dumping on the ground.*

Checking the coolant level

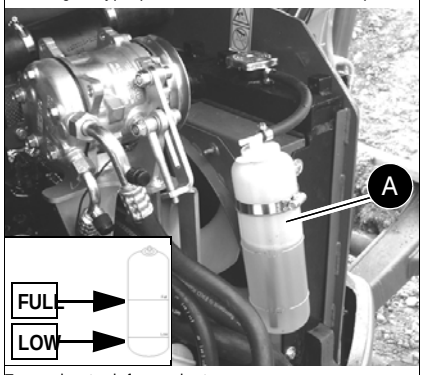
Old engine type (up to serial number AG00572):



Expansion tank for coolant



New engine type (from serial number AG00573):



Expansion tank for coolant

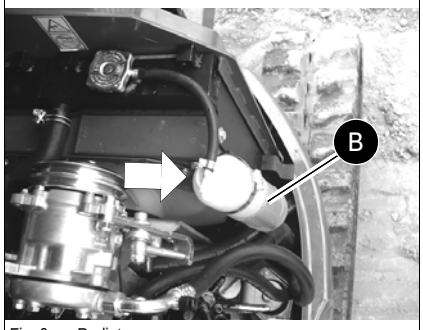


Fig. 6: Radiator

☞ *Proceed as follows:*

- Park the machine on level ground
- Switch off the engine!
- Fold the control lever base up
- Remove the key and carry it with you
- Let the engine and the coolant cool down
- Open the engine cover
- Check the coolant level on the transparent coolant tank A and on the radiator B

☞ If the coolant level is below the LOW seam or if there is no coolant at the radiator's filler inlet:

➥ Fill up coolant

Important!

Check the coolant level once a day.
We recommend checking it before starting the engine.

Filling up coolant

After the engine has cooled down:

☞ *Release overpressure in the radiator*

☞ *Carefully open the cap to the first notch and fully release the pressure*

☞ *Open filler cap B*

☞ *Fill in coolant up to the lower edge of the filler inlet (radiator)*

☞ *Close filler cap B*

☞ *Start the engine and let it warm up for about 5 – 10 minutes*

☞ *Switch off the engine*

☞ *Remove the key and carry it with you*

☞ *Let the engine cool down*

☞ *Check the coolant level again*

➥ The coolant level must be between the LOW and FULL tank seams

☞ *If necessary, fill up coolant and repeat the procedure until the coolant level remains constant*

Important!

Check the antifreeze every year before the cold season sets in

5.5 Air filter

Notice

Possible equipment damage. The filter cartridge will be damaged if it is washed or brushed out.

Keep in mind the following to avoid premature engine wear:

- ▶ Do not clean the filter cartridge.
- ▶ Replace the filter cartridge when the indicator light comes on.
- ▶ Never reuse a damaged filter cartridge.
- ▶ Ensure cleanliness when replacing the filter cartridge.

Indicator 31 in the round display element monitors the filter cartridge.

☞ *Replace outside filter B and inside filter C:*

- If indicator 31 in the round display element comes on
- According to the maintenance plan

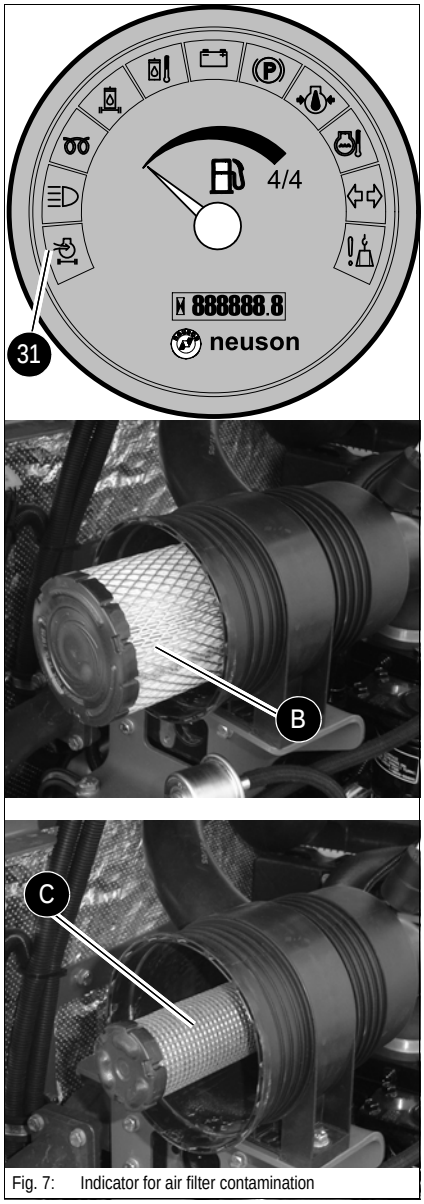


Fig. 7: Indicator for air filter contamination

Important!

For applications in especially dusty environment, the air filter is fitted with an extra inside filter C. Do not clean inside filter C.

Notice

Filter cartridge degradation. Filter cartridges degrade prematurely in environments with acidic air, such as acid production facilities, steel and aluminum mills, chemical plants, and other non-ferrous metal plants.

- ▶ Replace outside filter B and inside filter C after no more than 50 service hours in acidic air.

General instructions for air filter maintenance:

- Store filters in their original packaging and in a dry place
- Do not knock the filter against other objects as you install it
- Check air filter attachments, air intake hoses and air filters for damage, and immediately repair or replace if necessary
- Check the screws at the induction manifold and the clamps for tightness
- Check the function of the dust valve, replace if necessary

Replacing the filter

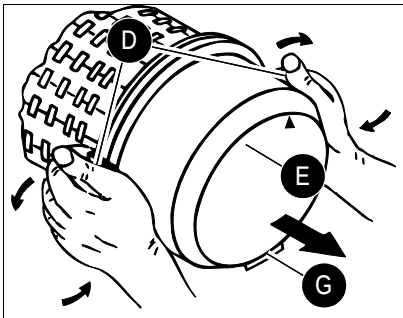


Fig. 8: Removing the lower housing section

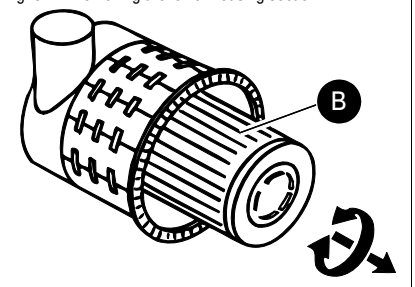


Fig. 9: Removing the filter element

- Replace outside filter *B* as follows:

☞ *Switch off the engine*

☞ *Remove the key and carry it with you*

☞ *Let the engine cool down*

☞ *Open the engine cover*

☞ *Remove dirt and dust from the air filter and the area around the air filter*

☞ *Fold both bow clips* D *on lower housing section* E *to the outside*

☞ *Remove lower housing section* E

☞ *Carefully remove outside filter* B *with slightly turning movements*

☞ Make sure *all dirt (dust) inside the upper and lower housing sections (*F *and* E*), including the dust valve, has been removed*

☞ Clean the parts with a clean lint-free cloth, do not use compressed air

☞ *Check the air filter cartridges for damage, only install intact filters*

☞ *Carefully insert new the outside filter* B *in the upper housing section* F

☞ *Position lower housing section* E *(make sure it is properly seated)*

☞ *Close both bow clips* D

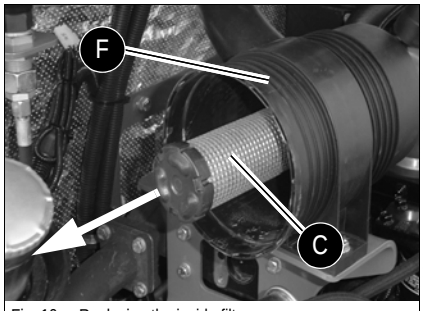


Fig. 10: Replacing the inside filter

- Replace inside filter *C* as follows:

☞ *Switch off the engine*

☞ *Remove the key and carry it with you*

☞ *Let the engine cool down*

☞ *Open the engine cover*

☞ *Remove dirt and dust from the air filter and the area around the air filter*

☞ *Fold both bow clips* D *on lower housing section* E *to the outside*

☞ *Remove lower housing section* E

☞ *Carefully remove outside filter* B *with slightly turning movements*

☞ *Carefully remove inside filter* C

☞ Cover the air supply at the end of the filter with a clean lint-free cloth to prevent dust from entering the engine

☞ Make sure *all dirt (dust) inside the upper and lower housing sections (*F *and* E*), including dust valve* G*, has been removed*

☞ Clean the parts with a clean lint-free cloth, do not use compressed air

☞ Remove the cloth from the air supply

☞ *Check the air filter cartridges for damage, only install intact filters*

☞ *Carefully insert the new inside filter* C *in the inside housing section* F

☞ *Carefully insert the outside filter* B *in the upper housing section* F

☞ *Position lower housing section* E *(make sure it is properly seated)*

☞ *Close both bow clips* D

Important!

Make sure dust valve G shows downwards once it is installed!

5.6 V-belt

Crushing, cutting, or burn hazards.

☞ *Stop the engine and permit a cool down time. Wait until the engine is comfortable to touch.*

☞ *Only check, retighten, or replace the V-belt when the engine is stopped.*

☞ *Disconnect the battery or the battery master switch before proceeding with work on the V-belt.*

Notice

Cracked and stretched V-belts cause engine damage.

☞ *Have the V-belt replaced by an authorized service facility.*

Check the V-belt once a day or every 10 service hours, and retighten if necessary!
Retighten new V-belts after about 15 minutes of running time.

Checking V-belt tension

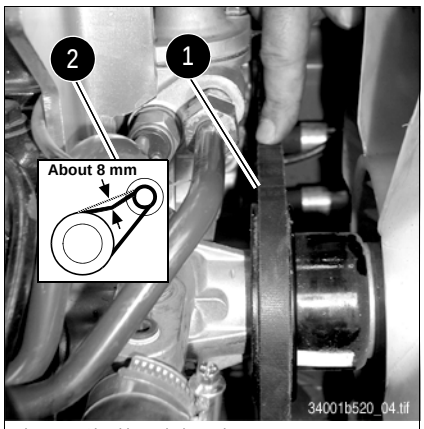


Fig. 11: Checking V-belt tension

- Check as follows:
  - ☞ Switch off the engine
  - ☞ Fold the control lever base up
  - ☞ Remove the key and carry it with you
  - ☞ Disconnect the battery or the battery master switch
  - ☞ Let the engine cool down
  - ☞ Open the engine cover
  - ☞ Carefully check V-belt 1 for damage, cracks or cuts
  - ☞ Replace the V-belt if it touches the base of the V-belt groove or the discs of the pulley
- If the V-belt is damaged:
  - ☞ Have the V-belt replaced by authorised staff
  - ☞ Press with your thumb about 100 N to check the deflection of the V-belt between the crankshaft disc and the fan wheel. A new V-belt should have a deflection of 6 to 8 mm(0.24'' to 0.31''), a used V-belt (after about 5 minutes running time) should have a deflection of 7 to 9 mm(0.28'' to 0.35'') 2
  - ☞ Retighten the V-belt if necessary

Retightening the V-belt

Notice

Possible engine damage. Overtightening the V-belt can damage the V-belt, the V-belt guide and the water pump bearing.

► Avoid contact of oil, grease or similar substances.

► Check V-belt tension – *see Checking V-belt tension* on page 5-12

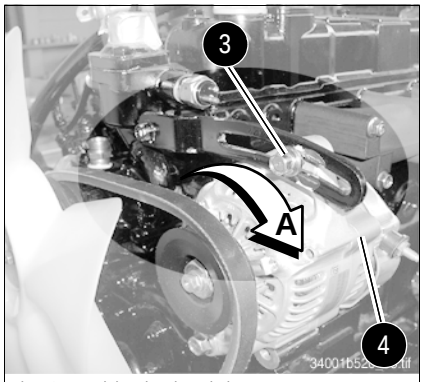


Fig. 12: Retightening the V-belt

- Retighten as follows:

☞ Switch off the engine

☞ Fold the control lever base up

☞ Remove the key and carry it with you

☞ Disconnect the battery or the battery master switch

☞ Let the engine cool down

☞ Open the engine cover

☞ Slacken fastening screws 3 of alternator 4

☞ Use a suitable tool to push the alternator in the direction of arrow A until reaching the correct V-belt tension (fig. 12)

☞ Keep the alternator in this position, and at the same time retighten fastening screws 3

☞ Check V-belt tension again and adjust it if necessary

☞ Connect the battery or the battery master switch

☞ Close the engine cover

Checking the V-belt of the air conditioning system

Notice

Possible engine damage. Excessive or insufficient tension of the V-belt can cause damage to the V-belt or to the compressor of the air conditioning system.

- ▶ Always make sure the V-belt has the correct tension.
- ▶ Replace V-belts with damage, cracks, cuts, etc.
- ▶ Avoid contact of oil, grease or similar substances with the V-belt.

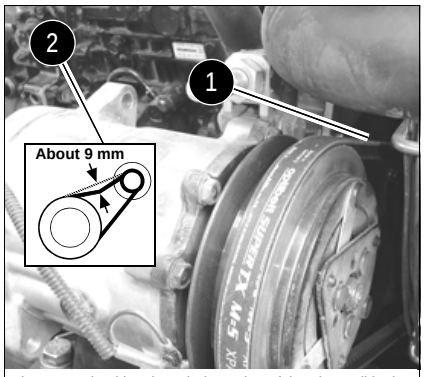


Fig. 13: Checking the V-belt tension of the air conditioning system

- Check as follows:
  - ☞ Switch off the engine
  - ☞ Fold the control lever base up
  - ☞ Remove the key and carry it with you
  - ☞ Disconnect the battery or the battery master switch
  - ☞ Let the engine cool down
  - ☞ Open the engine cover
  - ☞ Carefully check V-belt 1 for damage, cracks or cuts
  - ☞ Replace the V-belt if it touches the base of the V-belt groove or the discs of the pulley
- If the V-belt is damaged:
  - ☞ Have the V-belt replaced by authorised staff
  - ☞ Press with your thumb about 100 N to check the deflection of the V-belt. A new V-belt should have a deflection of 7 to 9 mm (0.28” to 0.35”), a used V-belt (after about 5 minutes running time) should have a deflection of 9 to 11 mm 2
  - ☞ Retighten the V-belt if necessary

Tightening the V-belt of the air conditioning system

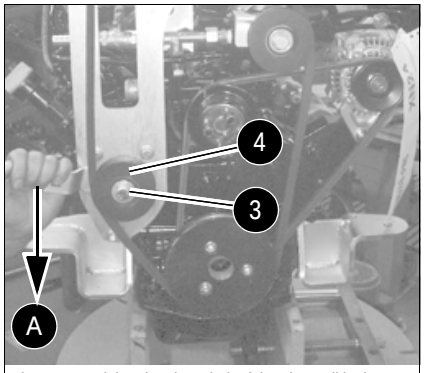
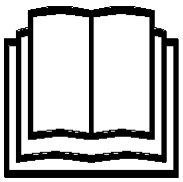


Fig. 14: Retightening the V-belt of the air conditioning system

- Retighten as follows:
  - ☞ Switch off the engine
  - ☞ Fold the control lever base up
  - ☞ Remove the key and carry it with you
  - ☞ Disconnect the battery or the battery master switch
  - ☞ Let the engine cool down
  - ☞ Open the engine cover
  - ☞ Slacken fastening screw 3 of spacer washer 4
  - ☞ Press the belt tensioner in the direction of arrow A until reaching the correct V-belt tension (fig. 14)
  - ☞ Keep the belt tensioner in this position, and at the same time retighten fastening screw 3
  - ☞ Check V-belt tension again and adjust it if necessary
  - ☞ Connect the battery or the battery master switch
  - ☞ Close the engine cover

5.7 Hydraulic system

Specific safety instructions



Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin and cause severe burns and injuries.

☞ *Do not operate the machine with leaking or damaged hydraulic system components.*

☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*

☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*

☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*

☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*

- Release the pressure in all lines carrying hydraulic oil prior to any maintenance and repair work. To do this:
  - Lower all hydraulically controlled attachments to the ground.
  - Move all control levers of the hydraulic control valves several times.
- Fold the control lever base up.
- If the hydraulic oil in the sight glass is cloudy, this indicates that water or air has penetrated the hydraulic system. This can cause damage to the hydraulic pump.
- Replace the hose or line if one of the problems mentioned below is detected.

☞ Damaged or leaky hydraulic seals.

☞ Worn or torn shells or uncovered reinforcement branches.

☞ Expanded shells in several positions.

☞ Entangled or crushed movable parts.

☞ Foreign bodies jammed or stuck in protective layers.

Notice

Possible equipment damage. Contaminated hydraulic oil, lack of oil, or the wrong hydraulic oil can severely damage to the hydraulic system.

► Take care to avoid contamination when working.

► Always use the filling screen when refilling hydraulic oil.

► Only use authorized oils of the specified type.
– *see chapter 5.14 Fluids and lubricants* on page 5-32

► Always fill up hydraulic oil before the level gets too low.
– *see Filling up hydraulic oil* on page 5-18

► If the hydraulic system is filled with biodegradable oil, then only use biodegradable oil of the same type for filling up. Observe the label on the hydraulic oil tank.

► Contact your Wacker Neuson dealer immediately if the hydraulic system filter is contaminated with metal shavings.

Environment!

Collect drained hydraulic oil and biodegradable oil in a suitable container!
Dispose of drained oil and used filters by an ecologically safe method.
Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

Checking the hydraulic oil level

Overfilling hazard. Filling the oil level above the MAX mark can damage the hydraulic system. Escaping oil may cause serious injuries.

☞ *Never fill the oil level above the MAX mark.*

☞ *Check the hydraulic oil level each time the machine is taken into service or once a day.*

Fig. 15: Parking the excavator

- If the attachment is not positioned as shown:

☞ Start the engine and let it run at idling speed

☞ Retract the bucket and boom rams, lower the boom and the bucket teeth to the ground

☞ Extend the stabiliser blade ram, lower the stabiliser blade to the ground.

☞ Switch off the engine again.

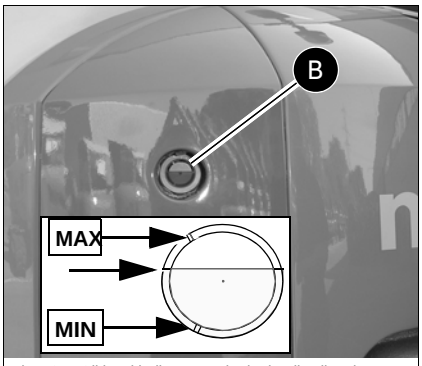


Fig. 16: Oil level indicator on the hydraulic oil tank

☞ *Proceed as follows:*

- Park the machine on level ground
- Retract the bucket and boom rams, lower the boom and the bucket teeth to the ground
- Extend the stabiliser blade ram, lower the stabiliser blade to the ground.
- Set the boom straight
- Switch off the engine
- Fold the control lever base up
- Sight glass B is located in the rear left corner of the machine in the trim.
- Check the oil level on sight glass B
- The oil level must be about 1 cm over the centre, between positions MIN and MAX, as shown by the arrows in fig. 16.

➥ The MIN level is marked by the lower joint

➥ The MAX level is marked by the upper joint

If the oil level is lower

- Fill up hydraulic oil

The oil level varies according to the machine's operating temperature:

Machine condition	Temperature	Oil level
• Before putting into operation	Between 10 and 30 °C (bet.50 & 86°F)	LOW mark
• Normal operation (bet.122 & 194°F) Bet.	50 and 90 °C	FULL mark

Important!

Measure the oil level of the hydraulic system only after the machine reaches its operating temperature.

Filling up hydraulic oil

Escaping oil hazard. Removing the hydraulic filter plug can cause pressurized oil to escape. Escaping oil may cause serious injuries.

☞ *Permit the hydraulic oil to cool to a temperature that is comfortable to the touch.*

☞ *Slightly loosen the breather plug on the hydraulic reservoir enough to relieve pressure in the tank.*

Do not fill up the hydraulic oil unless the engine is switched off. Otherwise, hydraulic oil will overflow at the filler opening on the hydraulic tank.

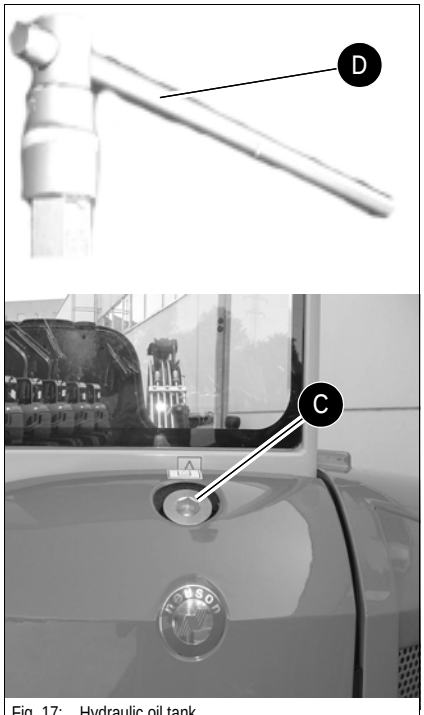


Fig. 17: Hydraulic oil tank

☞ *Fill up as follows:*

- Park the machine on level ground
- Retract the bucket and boom rams, lower the boom and the bucket teeth to the ground
- Lower the stabiliser blade to the ground
- Set the boom straight
- Switch off the engine
- Fold the control lever base up
- Let the engine cool down
- Slowly open plug C with tool D included in the tool kit

With the filter insert in place:

- Fill up hydraulic oil
- Check the hydraulic oil level on sight glass B
- Fill up if necessary and check again
- Tightly close plug C again with tool D

Important!

The tool kit is in the engine compartment!

Important information for the use of biodegradable oil

- Use only the biodegradable hydraulic fluids which have been tested and approved by Neuson Baumaschinen GmbH. Always contact Neuson Baumaschinen GmbH for the use of other products which have not been recommended. In addition, ask the oil supplier for a written declaration of guarantee. This guarantee is applicable to damage occurring on the hydraulic components, which can be proved to be due to the hydraulic fluid
- Use only biodegradable oil of the same type for filling up. In order to avoid misunderstandings, a label providing clear information is located on the hydraulic oil tank (next to the filler inlet) regarding the type of oil currently used! Replace missing labels!
  The joint use of two different biodegradable oils can affect the quality of one of the oil types. Therefore, make sure the remaining amount of initial hydraulic fluid in the hydraulic system does not exceed 8 % when changing biodegradable oil (manufacturer indications)
- Do not fill up with mineral oil – the content of mineral oil should not exceed 2 % in order to avoid foaming problems and to ensure biological degradability
- When running the machine with biodegradable oil, the same oil and filter replacement intervals are valid as for mineral oil – *see chapter 5.15 Maintenance plan (overview)* on page 5-35
- Always have the condensation water in the hydraulic oil tank drained by an authorised service facility before the cold season. The water content may not exceed 0.1 % by weight
- The instructions in this Operator's Manual concerning environmental protection are also valid for the use of biodegradable oil
- If additional hydraulic attachments are mounted or operated, use the same type of biodegradable oil for these attachments to avoid mixtures in the hydraulic system

Subsequent change from mineral oil to biodegradable oil must be carried out by an authorised service facility or by your Neuson partner

5.8 Pilot valve

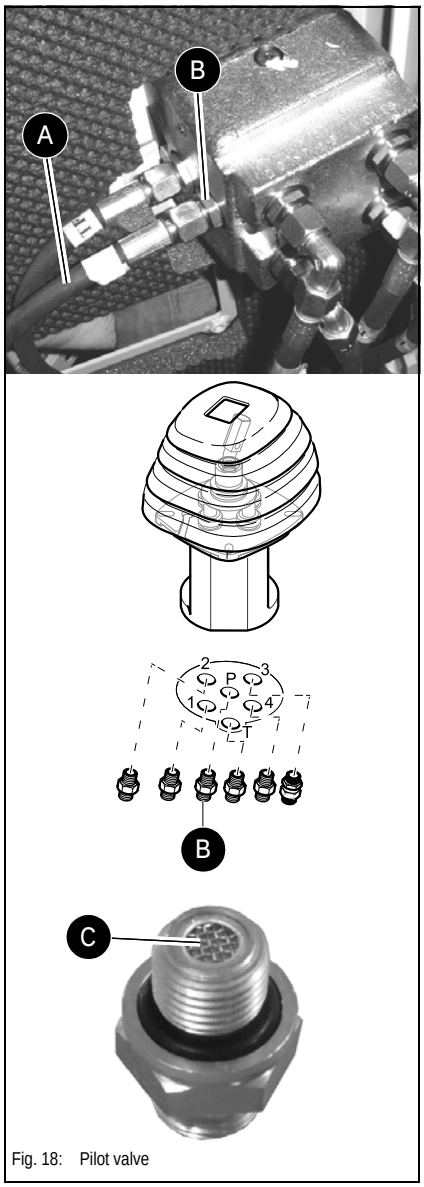


Fig. 18: Pilot valve

Notice

Possible equipment damage. Dirty oil can damage the piston valves within the pilot valves.

▶ Check the pilot control filter every 1000 s/h and clean it if necessary.In order to protect the piston valves in the pilot valves from damage due to dirt in the oil, check the pilot control filter every 1000 s/h and clean it if necessary!

Check the pilot valve as follows:

☞ *Park the machine on level ground*

☞ *Retract the bucket and boom rams, lower the boom and the bucket teeth to the ground*

☞ *Lower the stabiliser blade to the ground*

☞ *Set the boom straight*

☞ *Switch off the engine*

☞ *Move the control levers in all directions repeatedly*

☞ *Switch off the ignition and remove the ignition key*

☞ *Fold up the control lever base*

☞ *Let the engine cool down*

☞ *Slowly open the breather filter*

➥ Release the pressure

☞ *Install the vacuum pump*

☞ Switch on the pump before routing the hoses

☞ Tilt the cab/remove the joystick

☞ *Remove pilot control hose A from the drive pilot valve/the joystick*

☞ *Remove pilot control filter B from the drive pilot valve/the joystick*

☞ *Check pilot control filter screen C for dirt and clean it if necessary. Replace it by a new filter if it is damaged!*

☞ *Assemble in the reverse order.*

Checking hydraulic pressure lines

Specific safety instructions

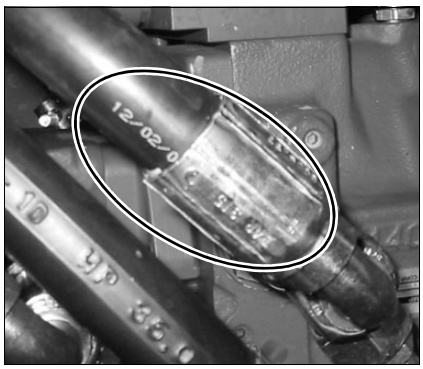
Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin and cause severe burns and injuries.

- ☞ *Do not operate the machine with leaking or damaged hydraulic system components.*
- ☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*
- ☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*
- ☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*
- ☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*
- ☞ *Retighten leaking threaded fittings and hose connections only when the system is not under pressure; i.e. release the pressure before working on pressurized lines.*
- ☞ *Never weld or solder damaged or leaking pressure lines and threaded connections. Replace damaged parts with new ones.*
  - Do not check for leaks with an incandescent light or open flame due to explosive fire risk from vaporized oil mist.

- Leaks and damaged pressure lines must be immediately repaired or replaced by an authorised service facility or after-sales staff.
  This not only increases the operating safety of your machine but also helps to protect the environment
- Replace hydraulic hoses every 6 years from the date of manufacture, even if they do not seem to be damaged

In this respect, we recommend that you observe all the relevant safety regulations for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country. Also observe DIN 20066, part 5.

The article number is marked on the clamping section, and the date of manufacture is indicated on the hose of each hose connection.



5.9 Tracks

- Track wear can vary according to work and ground conditions.

☞ We recommend checking track wear and tension once a day.

☞ Park the machine on firm and level ground to check and carry out maintenance.

Checking track tension

Crushing hazard. Do not work under the machine unless it has been raised and supported properly.

☞ *Raising the machine with the stabilizer and working attachments is not an acceptable stable platform to elevate the machine for work underneath the machine!*

Check track tension as follows:

- The rubber track has a mark B as shown in *Fig. 19*

☞ *Place the excavator so that mark B of the rubber track is between the drive pinion C and the track tension roller D*

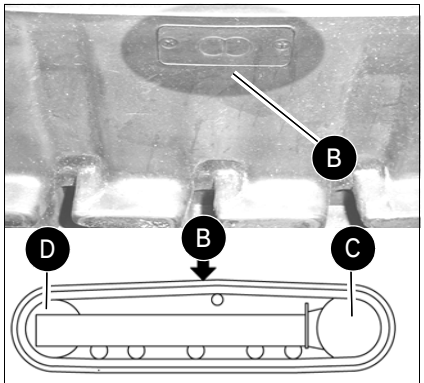


Fig. 19: Rubber track mark

Important!

There is no mark on the steel tracks (options). Positioning the steel tracks is not possible.

- No specific position is required for the steel tracks (option)

Fig. 20: Raising the excavator

☞ *Park the machine on firm and level ground*

☞ *Raise the excavator with the boom and the stick*

☞ Slowly and carefully actuate the control levers

☞ *Switch off the engine*

☞ *Remove the key and carry it with you*

☞ *Fold the control lever base up*

☞ *Use suitable auxiliary means to support the machine*

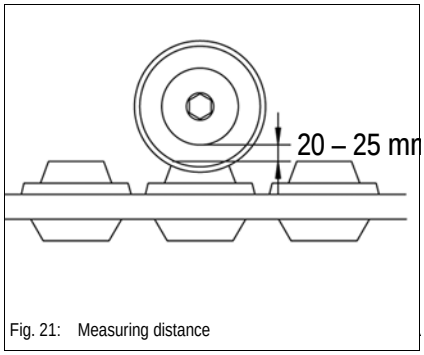


Fig. 21: Measuring distance

- Standard play between the sliding block's shoulder and the contact area of the second support roller of the drive pinion is 20 – 25 mm (0.39'' - 0.98'').

☞ Set the tension as follows if it is not in accordance with the rated value.

Setting the tracks

Projectile hazard.The grease fitting for track adjustment is subject to high pressure. The grease fitting can become a projectile if pressure caused by track tension is not properly relieved.

☞ *Do not remove the grease fitting.*

☞ *Wear safety goggles, gloves and protective clothing to reduce skin exposure to grease. Wipe grease from skin and seek immediate attention if grease contacts eyes.*

☞ *When relieving the pressure in the track tension system, do not turn the grease fitting farther than one counter-clockwise turn.*

☞ *Do not loosen any part of the track tension system until the pressure has been released from the track tension system.*

☞ *Keep your face away from the lubricating valve connection.*

☞ *Do not use auxiliary force on the track or idler in an effort to force grease from the loosened fitting. Contact your* Wacker *Neuson dealer and wait for a qualified technician to determine the problem and how to solve it.*

Notice

Possibility of equipment damage. Excessive tension of the tracks causes severe damage to the ram and the track.

☞ *Tighten the tracks only up to the prescribed measuring distance.*

Tightening the tracks

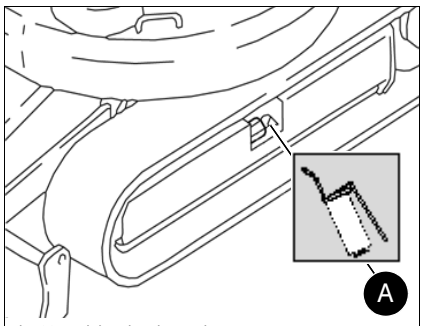


Fig. 22: Tightening the tracks

☞ *Inject grease with the pump through lubricating valve A*

☞ *Check the tension is correct by starting the engine, letting it run at idling speed and slowly moving the machine forwards and reverse and switching it off again*

☞ *Check the tension of the track tracks again*

➥ If it is not correct:

☞ Adjust again

☞ *Should the track track still be slack after injecting more grease, replace the track or the seal in the ram. Contact a* Wacker *Neuson dealer in this case*

Reducing tension

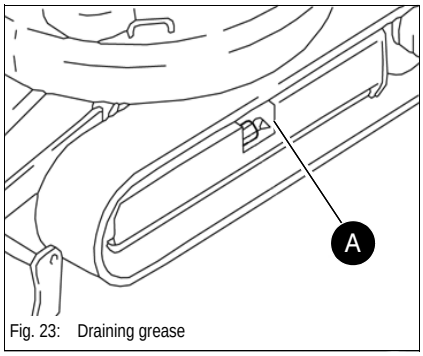


Fig. 23: Draining grease

- Draining grease in a way different from the one described below is very dangerous. Also bear in mind the safety instructions on this page

☞ *Slowly open the lubricating valve A by 1 turn to allow the grease to flow out.*

☞ Place a suitable container underneath to collect the grease

➥ The grease flows out of the groove of the lubricating valve

☞ *Retighten the lubricating valve A*

☞ *Check the tension is correct by starting the engine, letting it run at idling speed and slowly moving the machine forwards and reverse and switching it off again*

☞ *Check the tension of the track tracks again*

➥ If it is not correct:

☞ Adjust again

Environment!

Use a suitable container to collect the grease as it flows out and dispose of it in an environmentally friendly manner.

5.10 Travelling drive

Burn and injury hazard. Immediately after switching off the engine, the engine's components and the oil are very hot. This can cause burns.
If the inside of the drive gear is under pressure, the oil or the plug can be squeezed out.

☞ *Wait until the engine has cooled down before beginning maintenance work.*

☞ *Slowly open the plug to reduce the pressure inside.*

Notice

Possibility of equipment damage from mixing gearbox oils. The Q8 T55 SAE 85W-90 gearbox oil is no longer produced.

- ▶ Only the Q8 T55 80W-90 gearbox oil is used from 10/2006 onwards.
- ▶ Do not mix both oils under any circumstances!

Checking the oil level and filling up oil

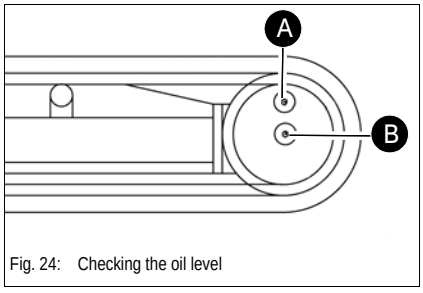


Fig. 24: Checking the oil level

☞ *Park the machine on firm and level ground*
☞ *Place the machine so that filler plug A is at the top*
☞ *Switch off the engine*
☞ *Let the engine cool down*
☞ *Fold the control lever base up*
☞ *Unscrew screws A and B with a suitable tool*
☞ *A small quantity of oil must flow out of opening B*
➥ If the oil does not flow out of opening B, fill up oil:
  ☞ Fill in oil through opening A,
    ➥ until a small quantity of oil flows out of opening B
☞ *Screw screws A and B back in again*
☞ *Move the machine a few metres*
☞ *Check the oil level again*
  ➥ If the oil level is not correct:
  ☞ Repeat the procedure

Draining oil

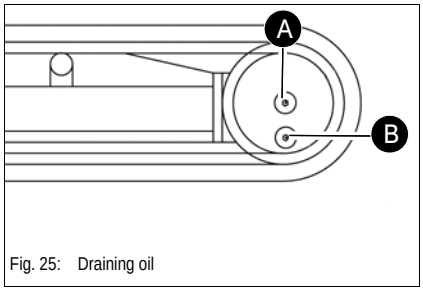


Fig. 25: Draining oil

☞ *Park the machine on firm and level ground*
☞ *Place the machine so that filler plug B is at the bottom*
☞ *Switch off the engine*
☞ *Let the engine cool down*
☞ *Fold the control lever base up*
☞ *Unscrew screws A and B with a suitable tool*
  ➥ The oil now flows out of opening B
  ☞ Use a suitable container to collect the oil as it drains

Environment!

Collect the oil with a suitable container and dispose of it in an environmentally friendly manner.

Maintenance of attachments

Important!

Correct maintenance and service is absolutely necessary for smooth and continuous operation, and for an increased service life of the attachments. Please observe the lubrication and maintenance instructions in the Operator's Manuals of the attachments

5.11 Electric system

Specific safety instructions

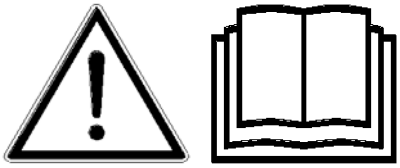
Batteries can explode or cause chemical burns. A battery contains sulfuric acid and emits explosive gases when heavily discharged.

☞ *Do not smoke or use an open flame near the battery.*

☞ *Do not handle the battery recklessly, causing acid to leak or spill.*

☞ *Do not add circuits or electrical accessories that exceed the system capacity.*

☞ *Do not connect a circuit without a correctly-rated fuse or circuit breaker.*



Notice

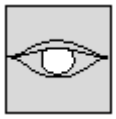
Possible equipment damage from improper battery connections.

- ▶ When connecting the battery leads, make sure the poles +/– are not inverted, otherwise sensitive electric components will be damaged
- ▶ Use only 12 V power sources. Higher voltages will damage the electric components.
- ▶ Do not interrupt voltage-carrying circuits at the battery terminals because of the danger of sparking.
- ▶ To prevent short circuits, never place tools or other conductive articles on the battery.
- ▶ Disconnect the negative (–) battery terminal from the battery before starting repair work on the electric system.

Important!

Dispose of used batteries properly.

Service and maintenance work at regular intervals



Before driving the machine

☞ *Check every time before driving the machine:*

- Is the light system OK?
- Is the signalling and warning system OK?

Every week

☞ *Check once a week:*

- Electric fuses – *see chapter Fuse box under the seat on the left* on page 6-3
- Cable and earth connections
- Battery charge condition – *see Battery* on page 5-27
- Condition of battery terminals

Instructions concerning specific components

Cables, bulbs and fuses

Always observe the following instructions:

- Defective components of the electric system must always be replaced by an authorised expert. Bulbs and fuses may be changed by unqualified persons
- When carrying out maintenance work on the electric system, pay particular attention to ensuring good contact in leads and fuses
- Blown fuses indicate overloading or short circuits. The electric system must therefore be checked before installing the new fuse
- Only use fuses with the specified load capacity (amperage)
  – *see chapter Fuse box under the seat on the left* on page 6-3

Alternator

Always observe the following instructions:

- Only test run the engine with the battery connected
- When connecting the battery, make sure the poles (+/–) are not inverted
- Always disconnect the battery before carrying out welding work or connecting a quick battery charger
- Replace defective charge indicators immediately
  – *see chapter 32 Indicator (red) – alternator charge function* on page 3-10

Battery

Battery acid hazard. The battery contains highly caustic sulphuric acid. This acid must not be allowed to come into contact with the skin, the eyes, clothing, or the machine.

☞ *When recharging and/or working near the battery, always wear goggles and protective clothing with long sleeves.*

☞ *If acid is spilled, thoroughly rinse affected skin immediately with clean water and seek medical attention immediately.*

Battery explosion hazard. Lead acid batteries can generate a potentially explosive hydrogen and oxygen mixture. Batteries can explode or rupture during jump starting, particularly if the electrolyte is low or has been frozen.

☞ *Avoid open flames and sparks in the vicinity of the battery. Do not smoke.*

☞ *Before jump-starting, take the battery to the dealer for appraisal by a qualified technician.*

☞ *Replace a dead battery with a new one equivalent to the original.*

☞ *Always disconnect the negative terminal (–) from the battery before starting repair work on the electric system.*

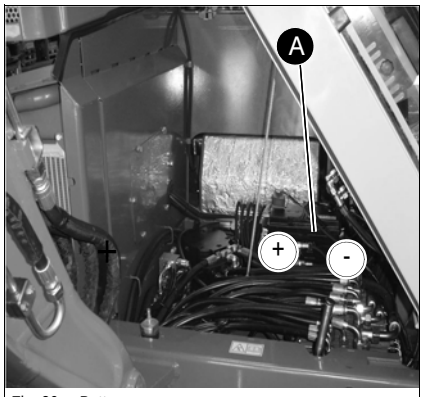


Fig. 26: Battery

Battery A is located under the cab, in front of the fuel tank. The battery is “maintenance-free”. However have the battery checked at regular intervals to make sure the electrolyte level is between the MIN and MAX marks.

Checking the battery requires it to be removed and must be carried out by an authorised workshop.

Always follow the specific battery safety instructions!

Important!

Do not disconnect the battery while the engine is running.

5.12 General maintenance work

Cleaning

Cleaning the machine is divided into 3 separate areas:

- Inside the cab
- Exterior of the machine
- Engine compartment

The wrong choice of cleaning equipment and agents can impair the operating safety of the machine on the one hand, and on the other undermine the health of the persons in charge of cleaning the machine. It is therefore essential to observe the following instructions.

General instructions for all areas of the machine

When using washing solvents

- Ensure adequate room ventilation
- Wear suitable protective clothing
- Do not use flammable liquids, such as petrol or diesel

When using compressed air

- Work carefully
- Wear goggles and protective clothing
- Do not aim the compressed air at the skin or at other people
- Do not use compressed air for cleaning your clothing

When using a high-pressure cleaner or steam jet

- Electric components and damping material must be covered and not directly exposed to the jet
- Cover the vent filter on the hydraulic oil tank and the filler caps for fuel, hydraulic oil etc.
- Protect the following components from moisture:
  - Engine
  - Electric components such as the alternator etc.
  - Control devices and seals
  - Air intake filters etc.

When using volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation
- Do not use unprotected lights or naked flames
- Do not smoke!

Inside the cab

Notice

Possible equipment damage from high-pressure cleaning. Water under high pressure can penetrate the electrical system, cause short circuits, damage seals, and disable the controls.

► Never use high-pressure cleaners, steam jets or high-pressure water to clean inside the cab.

We recommend using the following aids to clean the cab:

- Broom
- Vacuum cleaner
- Damp cloth
- Bristle brush
- Water with mild soap solution

Cleaning the seat belt:

- Clean the seat belt (which remains fitted in the machine) only with a mild soap solution; do not use chemical agents as they can destroy the fabric!

Exterior of the machine

The following articles are generally suitable:

- High-pressure cleaner
- Steam jet

Engine compartment

Cutting, crushing, or burn hazards.

☞ *Stop the engine before cleaning.*

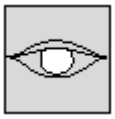
Notice

Possibility of sensor damage. Water or steam jet cleaners can penetrate sensitive electronic components, leading to sensor failure and possible engine damage.

► Allow the machine to cool completely before cleaning the engine with a water or steam jet.

► Do not point the jet directly at electric sensors such as the oil pressure switch.

Screw connections and attachments



All screw connections must be checked regularly for tightness, even if they are not listed in the maintenance schedules.

☞ *Engine fastening screws*

☞ *Fastening screws on the hydraulic system*

☞ *Line, bucket teeth and pin fastenings on the attachment*

Retighten loose connections immediately. Contact an authorised workshop if necessary.

Pivots and hinges

All mechanical pivot points on the machine (e.g. door hinges, joints) and fittings (e.g. door arresters) must be lubricated regularly, even if they are not listed in the lubrication plan.

5.13 Maintenance if the machine is out of service for a longer period of time

Notice

Possibility of equipment damage from improper maintenance.

► If the machine is out of operation, run it once a month without load. Remove the grease from the piston rods first!

Preparatory work before taking the machine out of service

☞ *Carefully clean and dry the entire machine.*

☞ *Apply grease to all lubrication points*

☞ *Change the engine oil*

☞ *Apply grease to the piston rods of the hydraulic rams*

☞ *Check and if necessary, fill up all oil levels such as in the gearbox and other units.*

☞ *Check and if necessary, fill up the hydraulic oil*

☞ *Fill up the fuel tank completely to avoid corrosion on the walls*

☞ *Check the antifreeze in the coolant, change as required*

☞ *Check the tyre pressure for the prescribed value and protect the tyres from direct sunlight*

☞ *Remove the earthing strap from the battery, or remove the battery and store it in a safe place. Load the battery and carry out battery maintenance at regular intervals.*

☞ *Close the exhaust pipe and the air intake opening of the air filter system*

Important!

Store the machine indoors if possible. If storing the machine outdoors cannot be avoided, place it on wooden boards and cover it with a tarpaulin.

Putting the machine into operation again

☞ *Remove the grease from the piston rods*

☞ *Install or connect the battery*

☞ *Remove the seals from the exhaust pipe and the air filter intake.*

☞ *Check the condition of the air filter cartridges and replace them if necessary*

☞ *If the machine was out of service for over 6 months, change the oil in the gearbox and other units.*

☞ *Also replace hydraulic oil filters (reflux, suction and breather filters) if the machine has been out of service for over 6 months*

☞ *Lubricate the machine according to the lubrication plan*

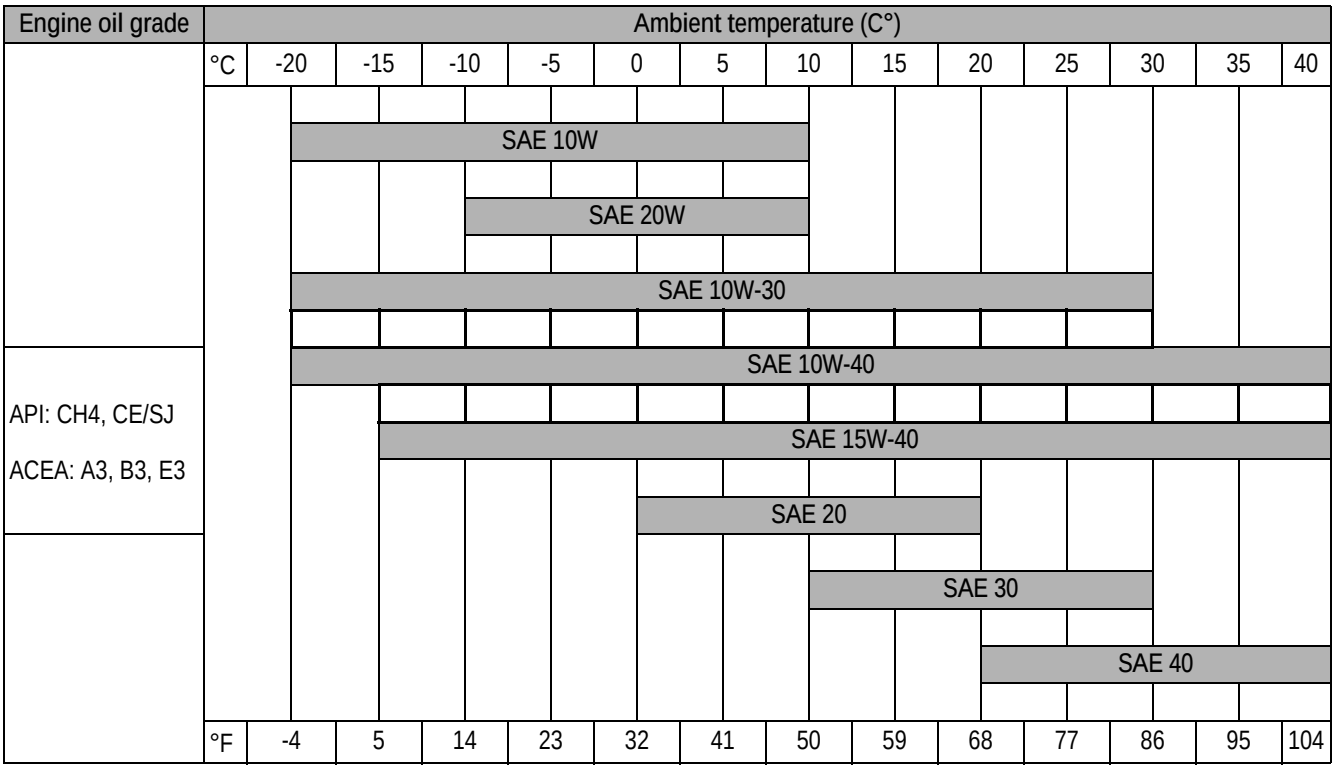
☞ *Start the engine and let it run without load*

5.14 Fluids and lubricants

Component / application	Engine / machine fluid	Specification	Season / temperature	Capacities [1]
Diesel engine	Engine oil	Q8 T660, SAE10W-40 [2]	-20 °C +40 °C	7.1 l
Travelling drive	Gearbox oil [3]	Q8 T 55, SAE 85W-90 [4]	Year-round	About 1.3 l each
		Q8 T 55, SAE 80W-90 [5]		
		FINA PONTONIC GLS, SAE85W-90		
Hydraulic oil tank	Hydraulic oil	HVLP46 [6]	Year-round	45 l
	Biodegradable oil [7]	PANOLIN HLP Synth 46		
		FINA BIOHYDRAN SE 46		
		BP BIOHYD SE-46		
Grease	Roller and friction bearings [8]	FINA Energrease L21M	Year-round	As required
	Open gear [9] (live ring gears)	BP Energrease MP-MG2	Year-round	As required
Grease nipples	Multipurpose grease [10]	FINA Energrease L21 M	Year-round	As required
Battery terminals	Acid-proof grease [11]	FINA Marson L2	Year-round	As required
Fuel tank	Diesel fuel	2-D ASTM D975 – 94 (USA)		44 l
		1-D ASTM D975 – 94 (USA)		
		EN 590 : 96 (EU)		
		ISO 8217 DMX (International)		
		BS 2869 – A1 (GB)	Depending on outside temperatures Summer or winter diesel fuel	
		BS 2869 – A2 (GB)		
Radiator	Coolant	Soft water + antifreeze ASTM D4985	Year-round	l
		Distilled water + antifreeze ASTM D4985		
Air conditioning	Refrigerating agent	R134a[12]	Year-round	750 g
	Compressor oil	Sanden SP10	Year-round	116.5 cm³
Washer system	Cleaning agent	Water + antifreeze	Year-round	2.0 l

1. The capacities indicated are approximative values; the oil level check alone is relevant for the correct oil level
   Capacities indicated are no system fills
2. As per DIN 51502; API CH4, CE/SJ; ACEA A3, B3, E3
3. Hypoid gearbox oil based on basic mineral oil (SAE85W-90 according to DIN 51502), (API GL-4, GL5)
4. The Q8 T55 SAE 85W-90 gearbox oil is no longer produced.
5. The Q8 T55 SAE 80W-90 gearbox oil is used from 10/2006 onwards. Do not mix both gearbox oils!
6. According to DIN 51524 section 3
7. Hydraulic ester oils (HEES)
8. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
9. KP2N-20 according to DIN 51502 EP multipurpose calcium sulphonate complex grease
10. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
11. Standard acid-proof grease
12. According to DIN 8960

Oil grades for the diesel engine, depending on temperature



Additional oil change and filter replacement (hydraulics)

Notice

Possible hydraulic component damage. An additional oil change and filter replacement can be required depending on how the machine is used. Failure to observe these replacement intervals can cause damage to hydraulic components.

► Observe the following intervals:

Application		Hydraulic oil	Hydraulic oil filter insert
Normal work (excavation work)		Every 1000 s/h	Replace the first time after 50 s/h, then every 500 s/h
Percentage of hammer work	20 %	Every 800 s/h	300 s/h
	40 %	Every 400 s/h	
	60 %	Every 300 s/h	100 s/h
	Over 80 %	Every 200 s/h	

Important!

Please refer to the maintenance plan on page *5-35* for additional maintenance work.

5.15 Maintenance plan (overview)

Work description	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.							
Fluid and filter changes ( ):							
Carry out the following oil and filter changes (check oil levels after test run):							
• Engine oil [1]		●	●				●
• Engine oil filter [2]		●	●				●
• Fuel filter [3]		●	●				●
• Air filter element as indicated by indicator						●	
• Coolant				●			●
• Hydraulic oil filter insert [4]		●	●				●
• Hydraulic oil				●			●
• Hydraulic oil tank breather				●			●
• Gearbox oil [5]		●		●			●
Inspection work ( ):							
Check the following material. Refill if necessary:							
• Engine oil	●					●	
• Engine coolant	●					●	
• Hydraulic oil	●					●	
• Gearbox oil		●					●
Clean water ducts [6]				●			●
Check engine/hydraulic oil radiator and air conditioning for contamination. Clean if necessary	●					●	
Check cooling systems, heating and hoses for leaks and pressure (visual check)	●					●	
Replace cab filter for heating and air conditioning			●				●
Check the pilot control filter for dirt, clean it if necessary				●			●
Air filter (damage)	●					●	
Prefilter with water separator: drain water	●					●	
• Clean			●				●

5.15 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Check V-belt condition and tension	●					●	
Check exhaust system for damage and condition	●					●	
Check valve tip clearance. Adjust if necessary				●			●
Clean and adjust the fuel injection pump [7]				●			●
Check and adjust the injection pressure of the injection nozzles, clean the injection needles/nozzles				●			●
Check and adjust injection time [8]				●			●
Empty diesel fuel tank			●				●
Check battery electrolyte. Fill up with distilled water if necessary		●	●			●	
Check alternator, starter and electric connections, bearing play and function			●				●
Check preheating system and electric connections			●				●
Check correct function of air filter contamination gauge			●				●
Pressure check of primary pressure limiting valves [10]		●	●				●
Check tracks for cracks and cuts	●					●	
Check chain tension. Retighten if necessary	●					●	
Check bearing play of tread rollers, track carrier rollers, front idlers			●				●
Check piston rods for damage	●					●	
Check screws for tightness [10]		●	●				●
Check pin lock	●					●	
Check line fixtures	●					●	
Check indicators for correct function		●	●				●
Check cab tilt lock, cables and cable holders for damage and correct function		●	●				●
Couplings, dirt pile-up on hydraulic system dust caps	●					●	
Check insulating mats in the engine compartment for damage/condition		●					●

5.15 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Ensure grease supply of central lubrication system (option)	●					●	
Check labels and Operator's Manual for completeness and condition		●					●
Check function of engine cover gas strut	●					●	
Lubrication service ( ):							
Lubricate the following assemblies/components:– *see Maintenance label* on page 5-39							
• Stabiliser blade	●					●	
• Swivelling console	●					●	
• Boom	●					●	
• Stick	●					●	
• Attachments	●					●	
• Grease strip on chassis – *see Maintenance label* on page 5-39	●					●	
Air conditioning ( ):							
Carry out the following maintenance and inspection work:							
• Function of air conditioning [11]		●					●
Replace cab filter			●				●
Check dehumidifier for corrosion, condensation and air bubbles		●					●
Replace dehumidifier and refrigerating agent [12]					●		●
Compressor oil [9]					●		●
Check refrigerating agent			●				●

5.15 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

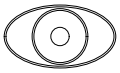
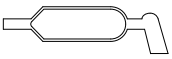
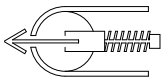
	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Functional check ( ):							
Check the function of the following assemblies/components. Rectify if necessary:							
• Lights, signalling system, acoustic warning system [10]		●	●				●
• Heating function [10]		●	●				●
Leakage check ( ):							
Check for tightness, leaks and chafing: pipes, flexible lines and screw connections of the following assemblies and components. Rectify if necessary:							
• Visual check	●					●	
☞ Engine and hydraulic system	●					●	
☞ Cooling and heating circuit	●					●	
☞ Travelling drive	●					●	

1. Drain engine oil the first time after 50 s/h, then every 500 s/h
2. Replace the engine oil filter the first time after 50 s/h, then every 500 s/h
3. Replace the fuel filter the first time after 50 s/h, then every 500 s/h
4. Replace the hydraulic oil filter insert the first time after 50 s/h, then every 500 s/h
5. Drain the gearbox oil the first time after 50 s/h, then every 1000 s/h
6. Clean the water ducts every other 1000 s/h servicing
7. Clean and adjust the fuel injection pump every other 1000 s/h servicing
8. Check and adjust injection time every other 1000 s/h servicing
9. Replace the compressor oil every other 1500 s/h servicing or every 2 years

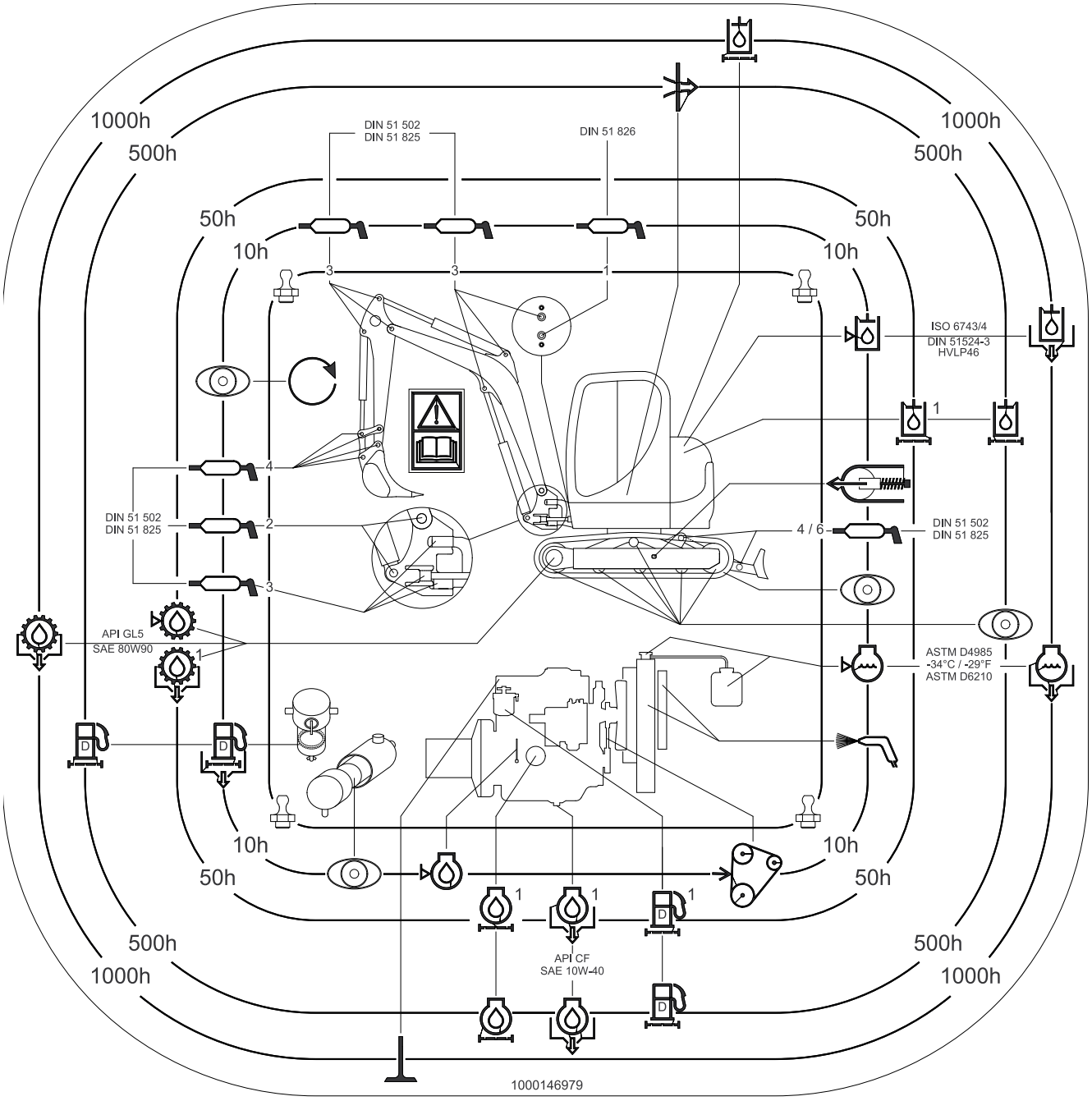
10 Check the first time at 50 s/h, then every 500 s/h
11 Switch on once every week
12 Replace the dehumidifier and the refrigerating agent every 1500 s/h or every 2 years

5.16 Maintenance label

Explanation of symbols on the maintenance label

Symbol	Assembly	Explanation
	General	Visual check
	General	Grease instructions
	Fuel system	Drain condensation water
	Fuel system	Replace the fuel filter, clean the fuel prefilter
	Radiator	Check the coolant level
	Radiator	Drain and fill in new coolant
	Engine	Check valve tip clearance. Adjust if necessary
	Engine	Check the engine oil level
	Engine	Change engine oil
	Engine	Replace the oil filter
	Engine	Check V-belt tension
	Travelling drive	Change oil
	Travelling drive	Check oil level
	Undercarriage	Check chain tension
	Hydraulic system	Check oil level
	Hydraulic system	Change hydraulic oil
	Hydraulic system	Replace the hydraulic oil filter, replace the breather filter

Symbol	Assembly	Explanation
	Radiator fins	Clean
	Heating, air conditioning	Replace the recirculated air filter



6 Specifications

6.1 Chassis

Sturdy steel sheet chassis, rubber-mounted engine

6.2 Engine

	Model 38Z$_3$	
Engine type	Tier II Up to serial number AG00572	Tier III From serial number AG00573
Product	Yanmar diesel engine	
Type	3TNV88-PNS	3TNV88-BPNS
Design	Water-cooled 4 stroke diesel engine	
No. of cylinders	3	
Displacement	1642 cm³ (100.2 in^3)	
Nominal bore and stroke	88 x 90 mm (3.46 x 3.54")	
Output	21,0 kW (28.2 hp) at 2400 rpm	
Max. torque	101.5 – 110.5 Nm (74.9 - 81.5 lbf ft) at 1100 rpm	106.6 Nm (78.6 lbf ft) at 1440 rpm
Max. engine speed without load	2500 ± 10 rpm	
Idling speed	1100 ± 50 rpm	
Fuel injection system	Direct injection	
Starting aid	Glow plug (preheating time 10 – 15 seconds)	Glow elements (preheating time 10 – 15 seconds)
Max. inclined position (engine no longer supplied with oil):	30° in all directions Observe the machine's climbing ability (30°/58%)!	
Exhaust values according to	97/68/EC Tier 2 EPA Tier 2	97/68/EC Tier 3A EPA Tier 4 interim

6.3 Hydraulic system

Hydraulics	Model 38Z$_3$
Pump	Double variable displacement + gear pump 2 x 16 + 10.5 + 4.5 cm³ (2 x 1.0 + 0.64 + 0.27 in^3)
Flow rate	2 x 40 + 26.3 + 11.3 l/min (2 x 11 + 7 + 3 gpm) at 2500 rpm
Service pressure for work and drive hydraulics	240 bar (3481 psi)
Swivel unit service pressure	210 bar (3046 psi)
Hydraulic oil cooler	Standard
Hydraulic tank capacity	45 l (12 gal)

6.4 Undercarriage and swivel unit

Undercarriage/swivel unit	Model $38Z_3$
2 speed ranges	2.8/4.6 km/h (1.7/2.9 mph)
Climbing ability	30°/58 %
Chain width	300 mm (11.8")
No. of track rollers on either side	4
Ground clearance	280 mm (11")
Ground pressure	0.34 kg/cm² (4.8 psi)
Upper carriage swivel speed	8.8 rpm

6.5 Stabiliser blade

Stabiliser blade	Model $38Z_3$
Width / height	1740/345 mm (68.5"/13.6")
Max. lift over / under subgrade	390/450 mm (15.4"/17.7")

6.6 Work hydraulics

Work hydraulics	Model $38Z_3$
Hydraulic pump displacement:	2 x 40 + 26.3 + 11.3 l/min at 2500 rpm
Control valve	11 sections/ 12 sections (3rd control circuit)
Max. service pressure	$240^{\pm5}$ bar ($3481^{\pm73}$ psi)
Main pressure restriction for boom/bucket/stick	$240^{\pm3}$ bar ($3481^{\pm44}$ psi)
Main pressure restriction for stabiliser blade	$210^{\pm3}$ bar ($3046^{\pm44}$ psi)
Main pressure restriction for pilot control pressure	$34^{-0/+3}$ bar
Main pressure restriction for swivel drive (hydraulic motor pressure restriction)	200 bar (2901 psi)
Filter	Reflux filter
Hydraulic oil tank	45 l (12 gal)

6.7 Electric system

Electric system	
Alternator	12 V 55 A
Starter	12 V 1.7 kW (2.3 hp)
Battery	12 V 71 Ah
Socket	E.g. for cigarette lighter; 15 A max.

Fuse box under the seat on the left

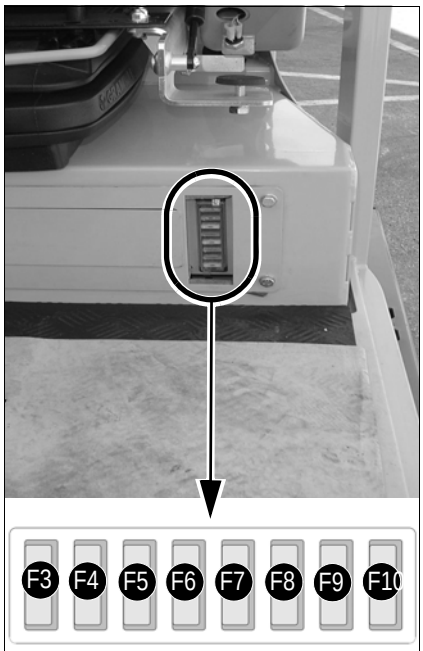


Fig. 1: Fuse box

Fuse no.	Rated current (A)	Protected circuit
F3	10 A	– Indicators, cutoff solenoid, relays
F4	10 A	– Boom light
F5	15 A	– Roof lights
F6	10 A	– Valves, horn
F7	15 A	– Heating, air conditioning
F8	10 A	– Wiper, interior light
F9	10 A	– Rotating beacon, radio
F10	15 A	– Socket, cigarette lighter

Main fuse box with relays at the upper left in the engine compartment

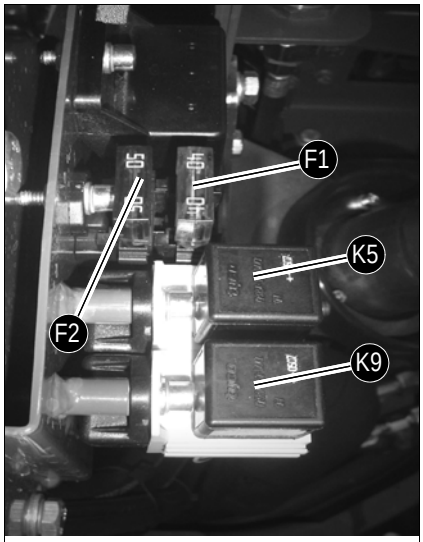


Fig. 2: Relay box under the cab

Fuse no.	Rated current (A)	Protected circuit
F1	40 A	– Start, preheat, cutoff solenoid
F2	50 A	– Fuel-filling pump, main fuse, ignition lock

Relay no.	Protected circuit
K 9	– Cutoff solenoid
K 5	– Preheating

Relays

The relays are located in the relay box under the cab, next to the swivelling console

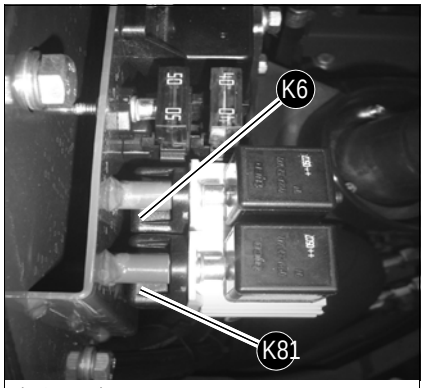


Fig. 3: Relays

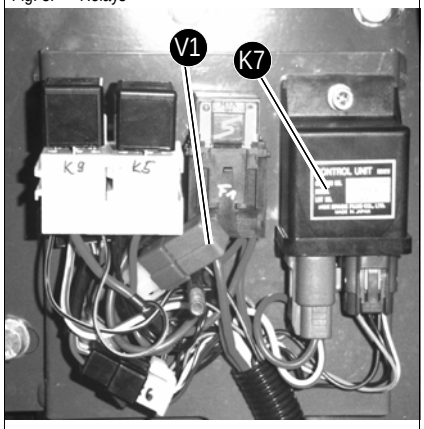


Fig. 3: Relays

Switching relay no.	Protected circuit
K 6	– Preheating timer
K 7	– Starting relay
K 8	– Cutoff solenoid timer
V 1	– Diode

6.8 Noise levels

Sound power level	Model 38Z$_3$
Sound power level (L_{WA})	95 dB (A)
Sound pressure level (L_{PA}) at the driver's ear	75 dB (A)

Important!

Measurement of sound power level according to EC Directive 2000/14 EC.
Noise level at the driver's ear measured according to EC Directives 84/532/EEC, 89/514/EEC and 95/27/EEC.
Measurements carried out on asphalted surface.

6.9 Vibration

Vibration	
Effective acceleration value for the upper extremities of the body *	< Trigger value
Effective acceleration value for the body *	< Trigger value

* Measurements as per 2002/44/EC (excavating, driving and hammering with a Neuson hammer). Machine and attachment operation and maintenance as per Operator's Manual.

6.10 Coolant compound table

Outside temperature	Coolant			
	Water	Anticorrosion agent		Antifreeze agent
Up to °C (°F)	% by volume	cm^3/l (in^3/gal)	% by volume	% by volume
4 (39.2)	99	10 (2.6)	1	–
-10 (14)	79			20
-20 (-4)	65			34
-25 (-13)	59			40
-30 (-22)	55			44

6.11 Dimensions model 38Z$_3$

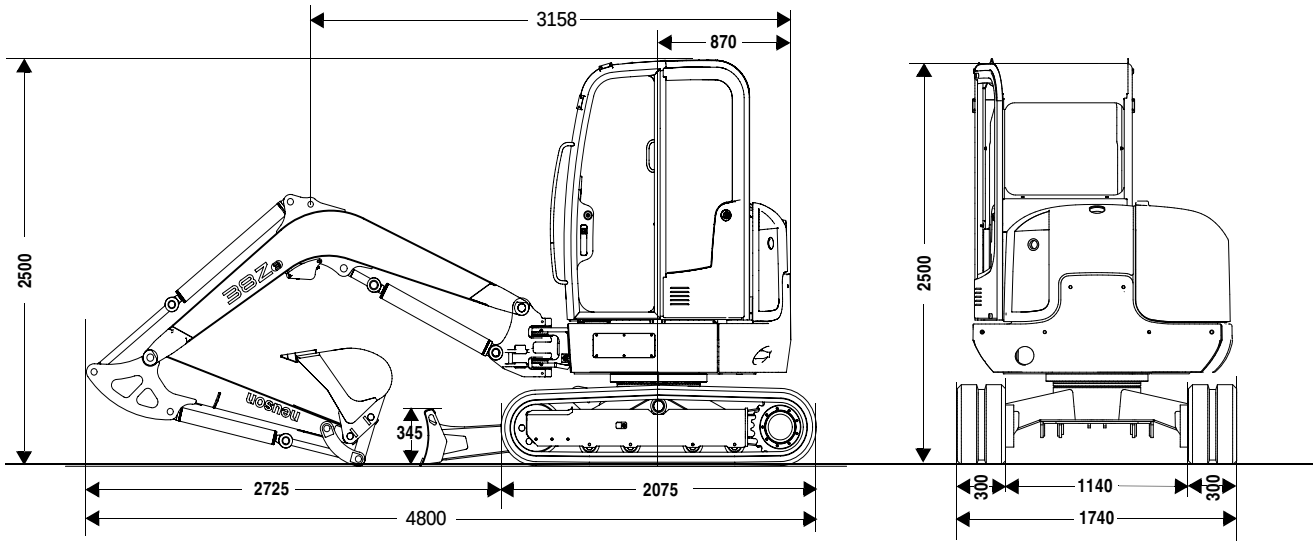
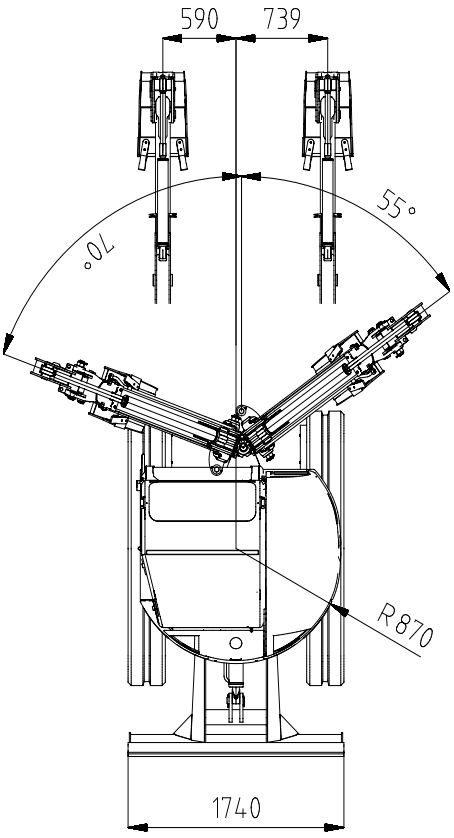


Fig. 4: Machine dimensions (model 38Z$_3$)



Main data	Model 38Z$_3$
Service weight with cab/canopy	3630 kg (8003 lbs)
Height	2500 mm (8'2")
Width	1740 mm (5'9")
Transport length	4800 mm (15'9")
Max. digging depth	3110 mm (10'2")
Stick length (standard)	1500 mm (4'11")
Stick length (long version)	1750 mm (5'9")
Max. digging depth for long stick (+ 300 mm)	3360 mm (11'0")
Max. vertical digging depth	2430 mm (7'11")
Max. vertical digging depth (long stick)	2670 mm (8'9")
Max. digging height	4530 mm (14'10")
Max. digging height (long stick)	4660 mm (15'3")
Max. dump height	3220 mm (10'7")
Max. dump height (long stick)	3350 mm (11'0")
Max. digging radius	5300 mm (17'5")
Max. digging radius (long stick)	5540 mm (18'2")
Max. reach at ground level	5300 mm (17'5")
Max. reach at ground level (long stick)	5430 mm (17'10")
Max. breakout force at bucket tooth	25,70 kN (5778 lbf)
Max. tearout force (standard stick)	21,90 kN (4923 lbf)
Max. tearout force (long stick)	19,40 kN (4361 lbf)
Min. tail end slewing radius	870 mm (2'10")
Max. tail end lateral projection (90° rotation of upper carriage)	0 mm (0')
Max. boom displacement to bucket centre (right-hand side)	740 mm (2'5")
Max. boom displacement to bucket centre (left-hand side)	590 mm (1'11")

6.12 Lift capacity table 38Z$_3$

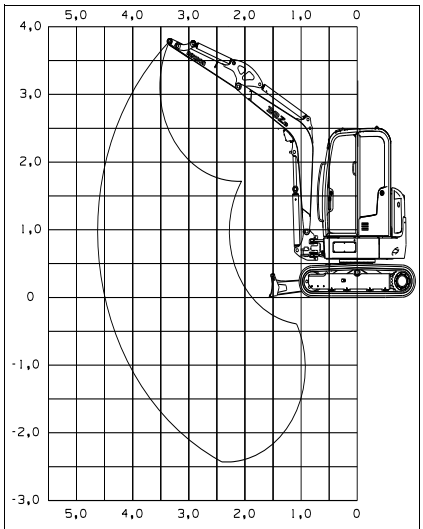
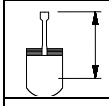
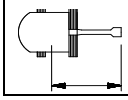


Fig. 5: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")					660* (1455*)	660* (1455*)		
2,0 m (6'7")			790* (1742*)	425 (937)	785* (1731*)	640 (1411)		
1,0 m (3'3")	825* (1819*)	395 (871)	840* (1852*)	410 (904)	1050* (2315*)	600 (1323)	1735* (3825*)	975 (2150)
0,0 m (0'0")	805* (1775*)	385 (849)	855* (1885*)	400 (882)	1210* (2668*)	570 (1257)	2025* (4464*)	925 (2039)
-1,0 m (-3'3")					1160* (2557*)	565 (1246)	1875* (4134*)	915 (2017)
-2,0 m (-6'7")							1440* (3175*)	945 (2083)

max	Admissible load on extended stick
A	Reach from live ring centre
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg and horizontal position on firm ground without bucket.

	With the stabiliser blade in driving direction
	Without the stabiliser blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.13 Lift capacity table 38Z$_3$ counterweight (option)

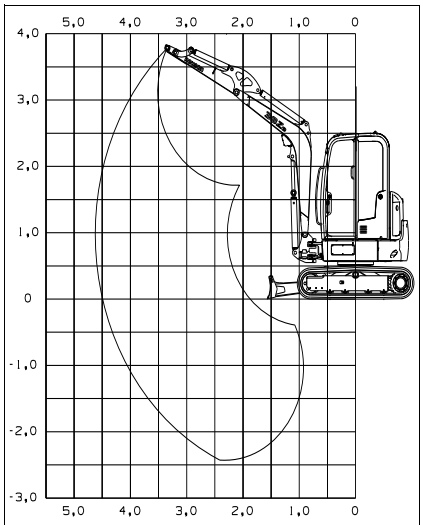
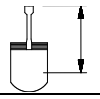
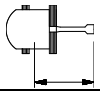


Fig. 6: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")					660* (1455*)	660* (1455*)		
2,0 m (6'7")			790* (1742*)	480 (1058)	785* (1731*)	715 (1576)		
1,0 m (3'3")	825* (1819*)	450 (992)	840* (1852*)	465 (1025)	1050* (2315*)	675 (1488)	1735* (3825*)	1095 (2414)
0,0 m (0'0")	805* (1775*)	440 (970)	855* (1885*)	455 (1003)	1210* (2668*)	645 (1422)	2025* (4464*)	1040 (2039)
-1,0 m (-3'3")					1160* (2557*)	640 (1411)	1875* (4134*)	1035 (2282)
-2,0 m (-6'7")							1440* (3175*)	1060 (2337)

max	Admissible load on extended stick
A	Reach from live ring centre
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg and horizontal position on firm ground without bucket.

	With the stabiliser blade in driving direction
	Without the stabiliser blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.14 Lift capacity table 38Z$_3$ long stick (option)

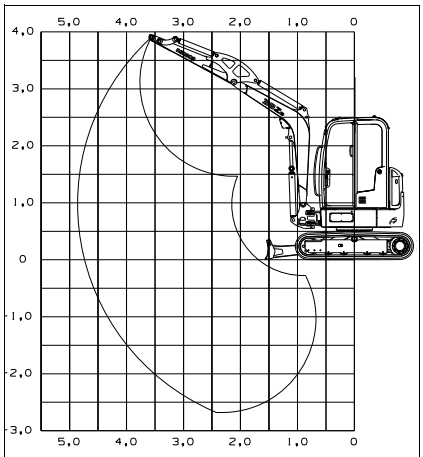
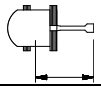


Fig. 7: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")								
2,0 m (6'7")			705* (1554*)	425 (937)	670* (1477*)	645 (1422)		
1,0 m (3'3")	755* (1664*)	360 (794)	790* (1742*)	410 (904)	965* (2127*)	600 (1323)	1520* (3351*)	985 (2172)
0,0 m (0'0")	750* (1653*)	350 (772)	845* (1863*)	395 (871)	1170* (2579*)	565 (1246)	1975* (4354*)	910 (2006)
-1,0 m (-3'3")					1175* (2590*)	550 (1213)	1920* (4243*)	895 (1973)
-2,0 m (-6'7")							1570* (3461*)	915 (2017)

max	Admissible load on extended stick
A	Reach from live ring centre
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg and horizontal position on firm ground without bucket.

	With the stabiliser blade in driving direction
	Without the stabiliser blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.15 Lift capacity table 38Z$_3$ long stick, counterweight (option)

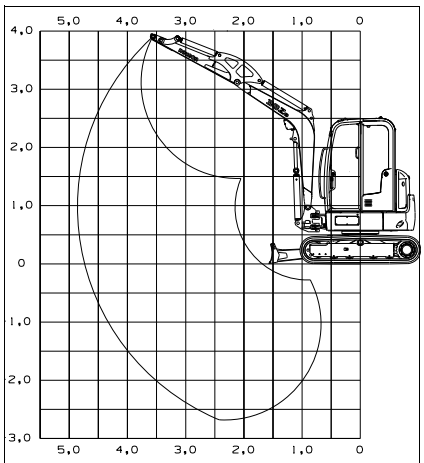
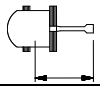


Fig. 8: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")								
2,0 m (6'7")			705* (1554*)	475 (1047)	670* (1477*)	670* (1477*)		
1,0 m (3'3")	755* (1664*)	405 (893)	790* (1742*)	460 (1014)	965* (2127*)	670 (1477)	1520* (3351*)	1095 (2414)
0,0 m (0'0")	750* (1653*)	400 (882)	845* (1863*)	445 (981)	1170* (2579*)	635 (1400)	1975* (4354*)	1020 (2249)
-1,0 m (-3'3")					1175* (2590*)	620 (1367)	1920* (4243*)	1005 (2216)
-2,0 m (-6'7")							1570* (3461*)	1025 (2260)

max	Admissible load on extended stick
A	Reach from live ring centre
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg and horizontal position on firm ground without bucket.

	With the stabiliser blade in driving direction
	Without the stabiliser blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

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